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ABSTRACT

"Kansas Working Papers in Linguistics" is intended as a forum for the presentation of the latest original research by the faculty and students of the Department of Linguistics and other related departments of the University of Kansas. Papers in this volume include: "Some Issues in Japanese Accent" (Kenneth Miner); "Retraction in Cariocan Portuguese" (Isaias Reis); "The Brahmi Family of Scripts and Hangul: Alphabets or Syllabaries?" (Christoper Wilhelm); "The Case of Subjects in the Romance Causative" (Sara Rosen); "Locative Inversion in Cantonese" (Sui-Sang Mok); "Spatial Expressions in Sinhala: Appearance of Verb Forms" (Sunanda Tilakaratne); "Division of Labor between Grammar and Pragmatics Concerning Anaphora" (Sun-Hee Kim); "A Study of Quantifier Phrases in Thai" (Phawadee Deephuengton); "Nouns in Tutelo" (Giulia Oliverio); "Proto-Algic IV: Nouns" (Paul Proulx); "Syllable Boundary Demarcation in Hualapai and Havasupai" (Marcellino Berardo); "A Bibliography on Incorporation and Polysynthesis in Native American and Paleosiberian Languages" (Willem de Reuse); and "Language Maintenance and Language Renewal among Cherokee People in Oklahoma" (Barbara Brooks). (JL)

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Kansas Working Papers in Linguistics

edited by

Mary Sarah Linn
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SOME ISSUES IN JAPANESE ACCENT*

Kenneth L. Miner

Abstract: Previous treatments of Japanese accent have regarded accent as a diacritic feature on the basis of which pitch patterns are predicted by general rules. I will show here that there are reasons for regarding pitch as inherently present in Japanese words, and will offer a tentative analysis founded on this assumption.

Introduction

Against all previous theoretical work on Tokyo Japanese accent, Pierrehumbert & Beckman 1988 argue on the basis of their phonetic investigations that Japanese words and longer accentual domains do not show tone spread; that is, in their analysis it is not the case that all moras are assigned a surface H or L pitch. Instead, at surface level only three or four moras in a word are specified for tone, the surface pitch of the remaining moras following from phonetic transitions between target values for the assigned tones.

Although, as I will point out, the overall position of Pierrehumbert & Beckman appears to be incompatible with the phonological effects of accent in Japanese--in particular the interaction of accent with vowel devoicing and the accentual behavior of verbal suffixes and post-nominal particles, as treated for example in McCawley 1977 and Haraguchi 1977 and summarized in Vance (1987)--I believe they are on the right track in seeing Japanese accent not as manifested in terms of pitch, but as pitch. That is: previous work on Japanese accent has taken accent itself to consist of the lexical marking of a particular syllable of each accented word (graphically represented by, say, an asterisk). General rules then impose a pitch contour on a word or larger domain with reference to this accent. What Pierrehumbert & Beckman have done is to suggest that accent in Japanese is lexically assigned tone, rather than tonal patterns imposed by general rules referring to an independent lexical accent.

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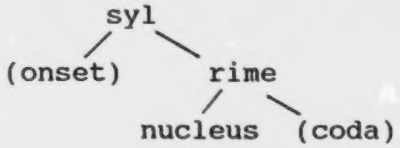
I believe, and will attempt to show, that such a revision in our conception of Japanese accent is motivated by the phenomenon of floating accent.

The purpose of this paper is to determine what is required to implement such a view of Tokyo Japanese accent.

Many of my examples are from Haraguchi (1977), McCawley (1977), and Vance (1987).

The data

The Japanese syllable (evidence that both syllable and mora are phonological units in Japanese is extensively reviewed and supplemented by Vance (1987) can be represented in the familiar way as follows (parenthesized constituents are optionally present):



The onset may be a consonant or zero (unless we take word-initial glottal stop to be systematic, in which case the onset is obligatory; see Vance 1987, § 4.10, for some discussion of this issue), the nucleus is a vocalic mora, and the coda if present is another vocalic mora, the mora nasal /N/, or the mora obstruent /Q/. (For our purposes the mora nasal can be regarded as an allophone of /n/ which occurs only in codas while other allophones of /n/ occur only in onsets, and the mora obstruent can be seen as the first half of a geminated consonant pair; for details see the comprehensive summary in Vance 1987.) Only the syllable nucleus may be accented (except as a result of the docking of a floating accent, on which see below).

The traditional account of Tokyo Japanese surface accent is as follows:

Accent is assigned to the nuclei of syllables, but pitch is superficially realized on all moras. A word may be accented on one (and only one) of its syllables, in which case the nucleus of the syllable carries the accent; or a word may be unaccented:

(1)	*mákura*	'pillow'
	kokóro	'heart'
	takará	'treasure'
	sakana	'fish' (unaccented)
	kóokoo	'filial piety'
	kookoo	'high school' (unaccented)

An unaccented short word-initial mora is low; all subsequent moras from left to right are high until an accented nucleus, if any, is reached, following which there is a fall. The resulting patterns for the first five items in (1) are therefore as in (2).

(2)
 H L L
m a k u r a

 L H L
k o k o r o

 L L H
t a k a r a

 L H H
s a k a n a

 H L L L
k o o k o o 'filial piety'

If a word-initial syllable is long and unaccented, as in the last item in (1), or in *senséi* 'teacher', "some standard speakers [first variety-KM] pronounce it LH, but others [second variety-KM] pronounce it HH" (Vance 1987:80). In the first variety, not only does a short unaccented word-initial syllable take an automatic low, as seen in the above examples, but the first mora of a long unaccented word-initial syllable also takes an automatic low:

 L H H H
k o o k o o 'high school'

 L H H L
s e n s e i 'teacher'

} (variety 1)

In the second variety (favored by younger speakers; McCawley 1977:262), such a syllable is high throughout:

H H H H
k o o k o o 'high school'

H H H L
s e n s e i 'teacher' (variety 2)

An unaccented disyllable such as *hasi* 'edge' and a disyllable with accent on the second syllable such as *hasí* 'bridge' have, in isolation, the same tonal pattern, as in (3).

(3) L H
h a s i 'edge'

L H
h a s i 'bridge'

However if an unaccented particle such as *wa* (topic marker) follows, the difference shows up in the expected drop in pitch after the accent in the case of the second item, as in (4).

(4) L H H
h a s i w a 'edge (topic)'

L H L
h a s i w a 'bridge (topic)'

From what has been said so far, we might expect the items in (5) to have the same tonal pattern, namely, LHHL.

(5) *butá káu* 'raise pigs'

sizensyúgi 'naturalism'

However there is in the case of the first item a drop after the accented final syllable of *butá*, that is, after the first H, before the second H begins; in the case of the second item, this drop is absent. Thus sequences like *butá káu* "sound distinctly like two accentual phrases" (Pierrehumbert & Beckman 1988:10).

Particles following nouns may create accentual domains longer than the word; patterns of accent within these domains differ depending on the particular particle (McCawley 1977:264). Some, like *wa* (topic marker) mentioned above, merely have the low pitch predicted by the general accent principles mentioned above (cf. (4)). Some, like *nado* 'and so on' and *kara* 'from' seem to have their own accent when following an unaccented word, *nado* on its first syllable and *kara* on its second syllable (in order to show this for *kara* I give examples below with *kara wa*), but when following an accented word, they lose this independent accent:

(6) L H L L L
kokoronado

L H H H L
sakananado

L H L L L L
kokorokarawa

L H H H H L
sakanakarawa

One type, which McCawley (loc.cit.) refers to as "preaccented", seems to impose a final accent on a preceding normally unaccented noun, but when following an accented noun, shows no such behavior. Such a particle is *sika* 'only':

(7) L H L L L
kokorosika

L L H L L
sakanasika

The question of how to account for this apparent accent shift will be a major topic to be treated below.

Haraguchi's autosegmental analysis

The essence of Haraguchi's solution (very similar to the non-autosegmental analysis of McCawley 1977) is as follows:

All Japanese words and larger domains of accent manifest a single HL tone pattern or melody. The H of this pattern is associated with the first lexically accented mora if any (which I will indicate by underlining), as in (8) (below we will deal with domains in which more than one accent occurs).

```
(8)    HL
       |
     m a̲ k u r a

           HL
           |
     k o k o̲ r o

               HL
               |
     t a k a r a̲

       HL
       |
     k o̲ o k o o        'filial piety'
```

If the word is unaccented, the H is associated with last mora in the word by default, as in (9).

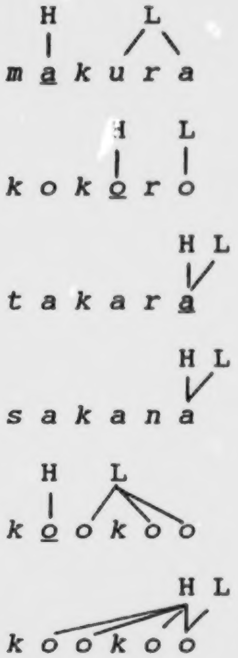
```
(9)            HL
               |
     s a k a n a

               HL
               |
     k o o k o o        'high school'
```

Tone association then follows as per the Association Convention; an adaptation of the wording of Goldsmith 1990:14 is as good a version as any for our purposes (cf. Haraguchi 1977:10-12; Vance 1987:94):

> Association Convention
>
> When unassociated tone-bearing elements [here moras-KM] appear on the same side of an association line, they will be automatically associated in a one-to-one fashion, radiating outward from the association line.

Thus we have the associations in (10). (Word-initial unaccented short syllables are here taken to be extratonal; see immediately below.)

(10)



(a) *makura*

(b) *kokoro*

(c) *takara*

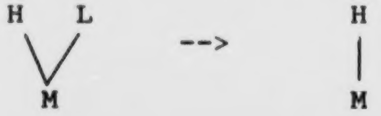
(d) *sakana*

(e) *kookoo* 'filial piety'

(f) *kookoo* 'high school' (variety 2)

If a lexical word follows one of the final HL contours, it remains, as we have seen in the discussion of (5) above. For the remaining cases, Haraguchi posits a Tone Simplification rule as follows (where M = mora):

(11) Tone Simplification

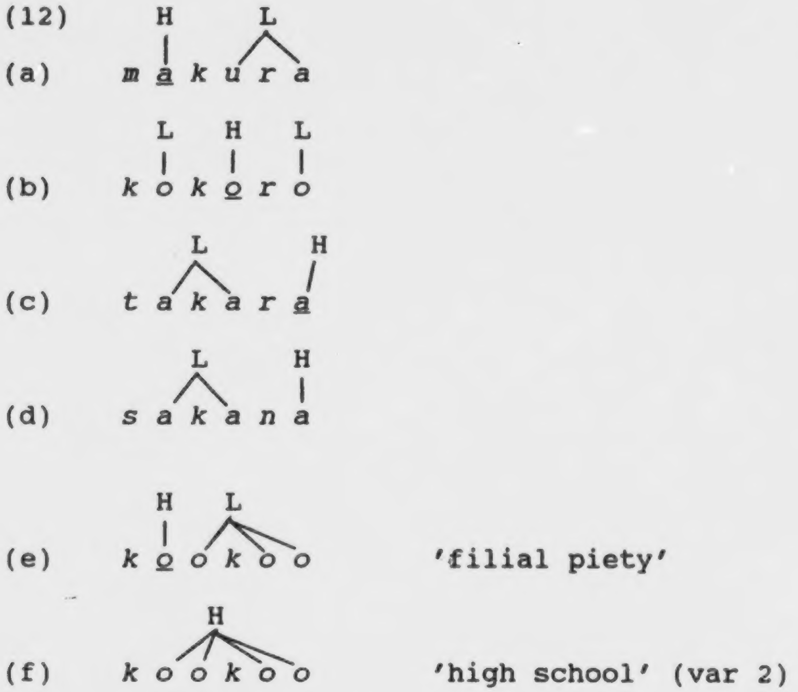


(if no lexical word follows)

Haraguchi also posits a special rule of Initial Lowering to lower a word-initial H if followed by a H; however I see no reason why we cannot simply claim that word-initial unaccented short syllables are permanently extratonal, with a default to low. Thus a H will not spread to them in the first place, either from the HL associated with an accented syllable or from the default H of unaccented words. Variety 1 speakers apply this rule to an initial mora, while Variety 2 speakers apply it to an initial syllable, which is why there is a difference between the two varieties for unaccented words with long initial syllables, such as *kookoo* 'high school' and *sensei* 'teacher.'

After these rules and the default to low for extratonal syllables have applied, we have, for words in pre-pause position, the surface tonal patterns desired, as in (12).

(12)


(a) H L m a k u r a
(b) L H L k o k o r o
(c) L H t a k a r a
(d) L H s a k a n a
(e) H L k o o k o o 'filial piety'
(f) H k o o k o o 'high school' (var 2)

If a lexical word follows, words like (c) and (d) will retain their contour, not undergoing (11), and "unaccented" words like (d) and (f) will allow their H to spread rightward to the next H.

The Analysis of Pierrehumbert & Beckman 1988

Pierrehumbert & Beckman 1988 examined fundamental frequency variation in phrases such as those in (13), placed in a textual frame.

(13) *moriya no mawari no omáwarisan*

'the policeman of the Forrests' neighborhood'

moriya no mawari no yoozinboo

'the watchman of the Forrests' neighborhood'

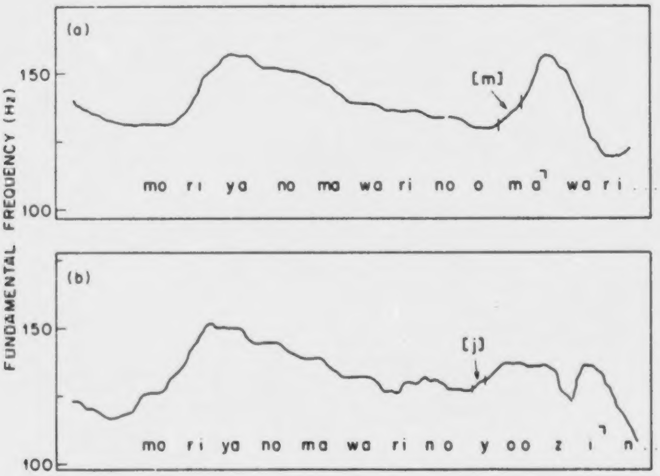
These phrases are predicted by Haraguchi's analysis to have a rather long stretch of H tones between the first *ri* and the accent. For example the first phrase, in which *moriya no* and *mawari no* form a single NP and thus a single accentual domain, is predicted to surface with the following tonal pattern:

L H H H H H H HL H L L LL

moriyanomawarinoomawarisan

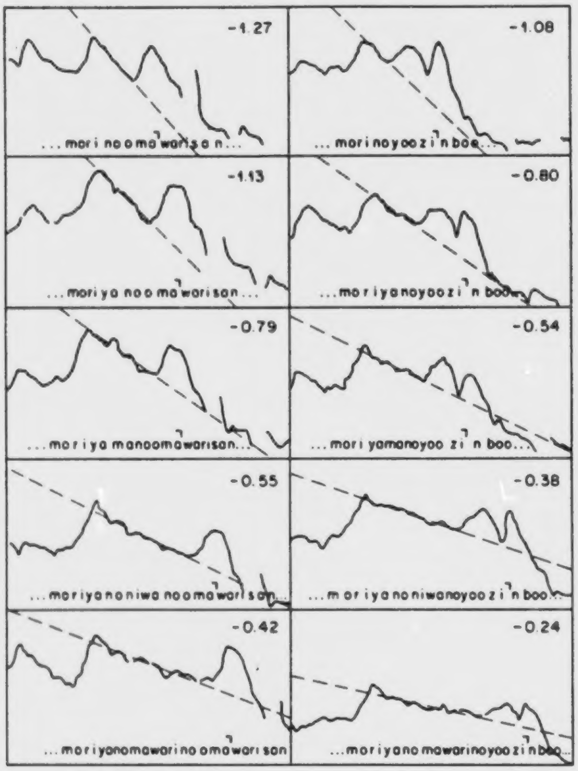
An F_0 tracing for this phrase (Pierrehumbert & Beckman 1988:27) is shown in (14).

(14)



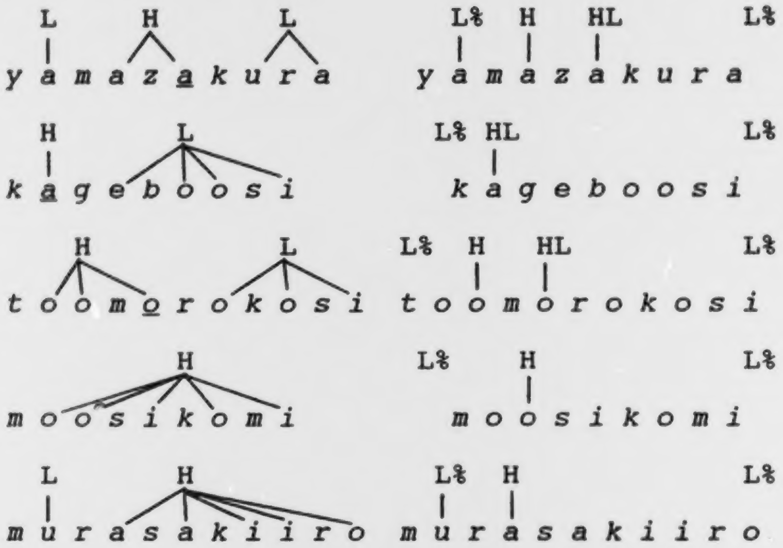
Note the expected rise on the second syllable of the phrase, and the expected rise from low to high on the first two syllables of *omawarisan*; however note also that there is a decline throughout the sequence of H tones postulated by Haraguchi's analysis. According to Pierrehumbert & Beckman, this cannot be mere downdrift (declination) if we assume a linear declination model, because study of phrases of varying length show that the decline in F_0 is steeper the shorter the distance between H tones, while if declination is linear we should find steeper declination the longer the distance between highs. Examples of their F_0 tracings of these longer phrases are given in (15).

(15)



The authors reject an exponential declination model (which would account for these facts: one would simply say that Japanese has "steep downdrift") and conclude that there are far fewer surface tones than moras (that is, some surface moras are unspecified for tone); note the items in (16) with surface patterns as claimed by Haraguchi and as claimed by Pierrehumbert & Beckman (the examples are *yamazákura* 'wild cherry,' *kágeboosi* 'shadow,' *toomórokosi* 'corn,' *moosikomi* 'proposal,' and *murasakiiro* 'purple.')

(16) Haraguchi: P & B:


L H L
y a m a z a k u r a
L% H HL L%
y a m a z a k u r a
H L
k a g e b o o s i
L% HL L%
k a g e b o o s i
H L
t o o m o r o k o s i
L% H HL L%
t o o m o r o k o s i
H
m o o s i k o m i
L% H L%
m o o s i k o m i
L H
m u r a s a k i i r o
L% H L%
m u r a s a k i i r o

Pierrehumbert & Beckman's HL goes on accented syllables if any, as in the autosegmental treatment; and a H goes on an unaccented second mora. Every word has a final boundary tone, L%, which in the case of a following word with an unaccented initial mora associates with that mora; thus the words above (which are taken to be in context) are shown with both initial and final L% boundary tones. Unlike in a tone-spreading analysis, where each mora eventually comes to have a surface tone, these are the only surface tones posited in the Pierrehumbert & Beckman analysis.

Some relevant phonological phenomena

As mentioned in the beginning, I believe Pierrehumbert & Beckman have opened the door to a better analysis of Japanese accent by interpreting accent directly as pitch. However, their account, if taken as a phonological analysis, is obviously incompatible with a tone-spreading analysis along the lines of Haraguchi (1977), which is required in order to explain the accent patterns resulting from the devoicing of high vowels and from the behavior of certain particles. I will discuss each of these in turn.

Vowel devoicing and accent shift

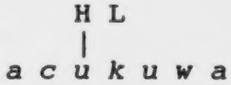
As is well-known, the Japanese high vowels /i/ and

/u/ devoice (and even disappear) in the neighborhood of voiceless obstruents at normal conversational tempos. Though there has been disagreement about the devoicing of accentable vowels, it seems clear that sometimes and for some speakers devoiced vowels remain accented (though in that case their phonetic realization is unclear), while in other cases the accent shifts to a different syllable when an accented vowel is devoiced (see Vance 1987, Chapter 6 for discussion). The question of predicting the direction of accent shift then arises. It turns out that Haraguchi's autosegmental approach is quite successful in accounting for the shifts which seem typical. (Note that whereas in many cases one can explain the direction of accent shift upon loss, devoicing or gliding of vowels by positing metrical feet, as in Halle & Vergnaud 1987, in Japanese there is no evidence whatever for metrical feet. In addition, as we shall see, accent may shift in either direction in Japanese.)

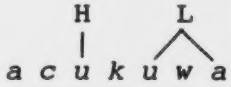
Right-shifted Accent

Haraguchi gives his derivation of the adverbial form of *acui* 'thick' followed by *wa* (topic marker). The adverbial suffix *-ku* regularly places accent on the preceding syllable: *acúku wa*. After devoicing we have *acu̥kú wa*. Haraguchi's derivation is as in (17).

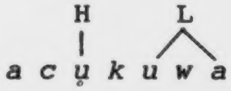
(17) Tone Assignment



Association

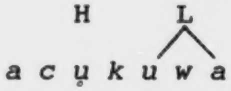


Devoicing

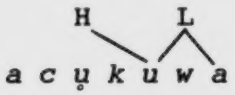


Haraguchi posits a straightforward Erasure Convention which deletes an association line between a tone and an element that has lost its ability to bear a tone:

Erasure

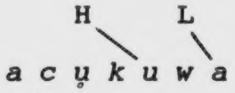


Needless to say, the prediction is that the unassociated H will associate rightward:

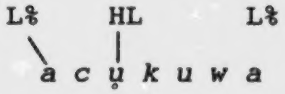


(Actually, rightward association of the stranded H in Haraguchi's analysis has to be specified; in mine it does not: the H is not associated to the left because that mora is extratonal.)

Finally, the previously motivated Tone Simplification applies:



Consider this phrase in terms of the analysis of Pierrehumbert & Beckman. The surface tonal specifications are:



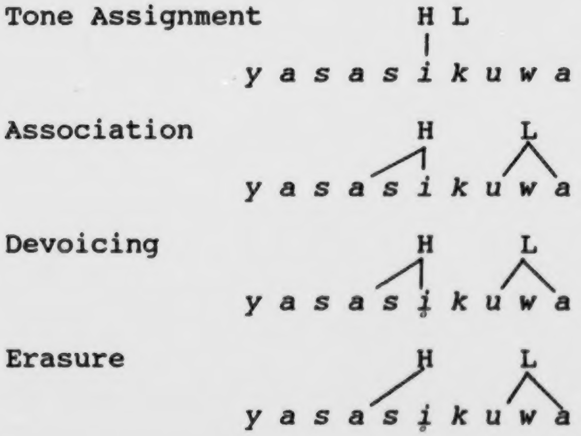
In such an analysis the right-shifted high, rather than following from general principles, would have to be handled by a special rule.

The ability of the autosegmental approach to resolve accent shift on a principled (and phonological) basis is even clearer in the case of leftward accent shift.

Left-shifted Accent

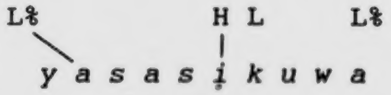
If the adverbial suffix *-ku* is attached to a longer adjective, such as *yasasii* 'easy', the accent appears one syllable earlier than required by *-ku*: we get *yasási̥ku wa*. Haraguchi's analysis (but without Initial Lowering) goes as follows:

(18)


Tone Assignment
H L
y a s a s i k u w a
Association
H L
y a s a s i k u w a
Devoicing
H L
y a s a s i̥ k u w a
Erasure
H L
y a s a s i̥ k u w a

Here there is no stranded tone and the perceived H on the syllable preceding the devoiced syllable follows automatically. Vance remarks (1987:98) that "Haraguchi does not explain why speakers interpret the unassociated /si/ as L, but presumably they simply interpret every mora after the last H as L." Another way of securing this effect is to posit L as the default tone assignment (see above, discussion of (12).

Consider the tonal specifications of Pierrehumbert & Beckman for this item:


L%
H L
L%
y a s a s i̥ k u w a

Since they argue that there is no tone spreading, there is no reason why the syllable preceding the one with the devoiced vowel should be phonologically high.

The behavior of particles

The assumption of tone spreading accounts for the behavior of the particles *nado* 'and the like' and *kara* 'from' mentioned above.

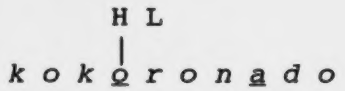
The behavior of *nado*

As described earlier, when *nado* follows an accented noun, the accent of the noun appears; but when *nado* follows an unaccented noun, accent comes on the first syllable of the particle:

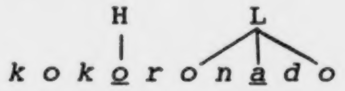
mákura	'pillow'	*mákura nado*
kokóro	'heart'	*kokóro nado*
takará	'treasure'	*takará nado*
sakana	'fish'	*sakana nádo*

These facts are accounted for in an autosegmental treatment if *nado* has inherent accent on its first syllable, and if N + *nado* constitute an accentual domain (which means that a single HL melody will be assigned to the phrase); its H will be assigned to the first accented syllable (as usual I mark inherent accent by underlining the accented mora):

Tone Assignment

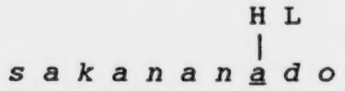


Association

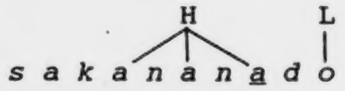


Tone spreading of the L has the desired effect. If the noun on the other hand is unaccented, we have:

Tone Assignment



Association



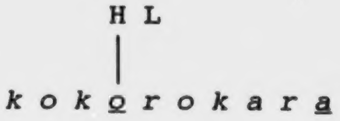
Here again we have the desired result. Note that in the first example it is the tone spreading of the L tone to the right that takes precedence over the inherent accent on *nado;* where this L does not spread--as in the second example--that accent appears.

The particle *made*, which also follows nouns, behaves exactly like *nado* in having inherent accent on its first syllable; -*(r)eba* (conditional) also behaves this way except that it is attached to verbs rather than nouns; see Vance 1987:87 and McCawley 1977: 263-4 for discussion.

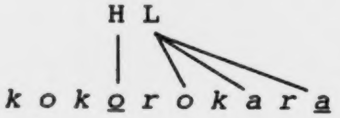
The behavior of *kara*

As we have seen earlier, the particle *kara* 'from' behaves similarly to *nado* except that it has an inherent accent on its second syllable: when *kara* follows an accented noun, the accent of the noun appears; when it follows an unaccented noun, it has its own accent on its second syllable: if we take *kara* to have inherent accent on its second syllable, the L-spread will override this accent in the case of accented words, but leave it unaffected in the case of unaccented words. Thus for an accent word followed by *kara* we have:

Tone Assignment

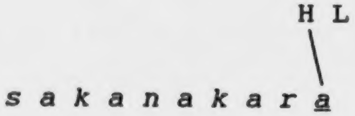


Association

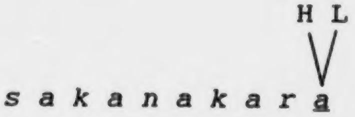


But for an unaccented word we have:

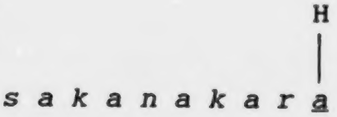
Tone Assignment



Association



Tone Simplification
(if no lexical word
follows)



The Implications of Shifted Accent

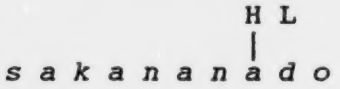
Some particles, such as *sika* 'only', behave like those discussed above when attached to an accented word, in that they then allow that word to retain its accent; but when following an unaccented word, they impose an accent on the final mora of that word:

kokóro sika 'only heart'

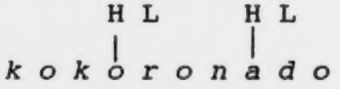
sakaná sika 'only fish'

The accent pattern of *sakana* + *sika* thus comes to be identical with that of *takara* + *sika*, where *takara* has an inherent accent on its final syllable.

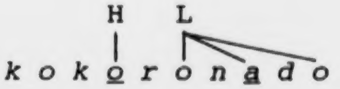
This creates an interesting challenge to autosegmental phonology. Recall that the traditional analysis of Japanese accent does not claim that a word accent consists of a HL tone assignment. If we were claiming that, we would be saying that HL is underlyingly associated with a syllable; this would have the consequence that underlyingly *sakana nado*, for example, is



but *kokoro nado* is underlyingly:



This would require us to posit a special rule to the effect that the leftmost HL displaces all HL to its right. What we want however is to say that only one HL is assigned to the string, and its L spreads to the right:



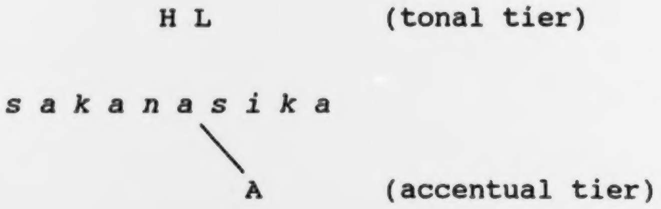
In other words, we have been claiming that Japanese accent is in essence a lexical diacritic on specific syllables (indicated above by underlining them), and that within a given accentual domain the H of the unique HL is associated with the first syllable in the accentual domain thus marked.

But if accent itself can float, it would seem that accent is on a tier of its own. Thus the kind of representation we want, it seems, for *sakana* + *sika* is, prior to Tone Assignment, H L (tonal tier)

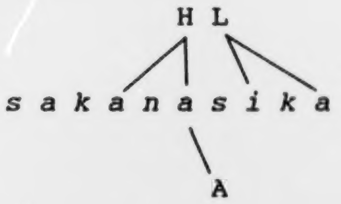
s a k a n a s i k a

A (accentual tier)

This would allow us to represent the accent of *sika* as docking (via some appropriate rule) to the left if no accent blocks it:



After this docking, Tone Assignment and Association would proceed normally:



However, positing an accentual tier for Japanese seems highly undesirable. Unlike normal autosegments, accent is realized on only one unit on the segmental tier: processes like spreading, for example, that normally apply to bring about one-to-many relations between units on different tiers, do not apply to accent.

As we have seen, traditional analyses have assumed that Japanese accent is a diacritic. This assumption has seemed attractively simple: a single syllable of each accented word "carries the accent" and general rules interpret it. There is however also the possibility of interpreting accent directly as pitch (as do Pierrehumbert & Beckman 1988); since such an analysis would remove the need for an independent diacritic of accent, it would seem also to have a certain simplicity.

It seems to me there are at least four arguments for such a solution:

(a) When *sika* 'only' follows an unaccented word which happens to end in a long syllable, *sika* imposes a high pitch on the second mora of that long syllable:

k o o k o $\overset{\text{H}}{\overset{|}{o}}$ *s i k a* 'only high school'

* *k o o k* $\overset{\text{H}}{\overset{|}{o}}$ *o* *s i k a*

It is well-understood (cf. Vance 1987:65) that accent goes on the first mora of a syllable; the second moras of syllables never bear accent. Therefore it is really not proper to say that *sika* imposes an accent on a preceding unaccented word: it simply imposes a H. The process is reminiscent of floating tone.

(b) No other language has been found to behave like Japanese as traditionally analyzed.

(c) The analysis of accent directly as pitch makes it possible to account for the facts of "accent shift" without either putting accent on its own tier or assuming deletion of an HL by another HL. (This will be shown in the next section.)

(d) In the traditional analysis some lexical words are unaccented, but, as McCawley points out (1977:264), there are no particles which have to be treated as unaccented. In an analysis in which accent is seen simply as pitch, there are no "unaccented" lexical words, removing the difference between lexical words and particles necessitated by the traditional analysis.

I will now describe such a solution and establish argument (c).

A Solution With Underlying Pitch

In this solution a syllable lexically may be assigned a H, a L, or no tone, and tones may or may not be lexically associated. Accent is regarded as a lexical pattern of H possibly followed by a L; lexical entries of various shapes would be as in (19).

```
(19)   H   L
       |   |
     m a k u r a        'pillow'

           H   L
           |   |
     k o k o r o        'heart'

         H   L
         |
     a t a m a          'head'

           H
           |
     s a k a n a        'fish'
```

Assuming that pitch is underlying for Tokyo Japanese requires that words having the pattern of *mákura* have an underlying H on the first syllable. If we posit a L on the following syllable, it will properly spread rightward as far as possible. The situation is analogous for words having the pattern of *kokóro*: the fact that the first mora is L is guaranteed by its extratonality (see above, discussion of (12) and (18)).

For words of the pattern of *atamá* on the other hand, we must guarantee that the second and third syllables are H. This can be done by positing an underlying unassociated L to the right of the H. The H must spread to the right (see <u>Tone Spread</u> below), and the unassociated L must dock to the right if possible, and if not, remain to give the final HL contour.

The most radical departure suggested here is the treatment of words like *sakana* which have traditionally been regarded as "unaccented." Note that they actually surface, in isolation, with a pattern like that of *atamá*: the difference between *sakana* and *atamá* is that there is no drop after *sakana*. I am suggesting that the difference is the presence, in *atamá*, versus the absence, in *sakana*, of the unassociated L. In this analysis, all words are accented, both lexical words and particles (cf. McCawley 1977.264).

As mentioned, an unassociated word-initial short syllable is extratonal. The major rules required are as in (20):

(20) Major Rules

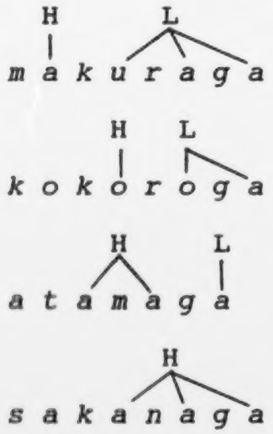
High Tone Deletion A high tone drops after a preceding word containing a H.

L-Docking An unassociated L docks to the right if possible (i.e., if a word follows having an initial unassociated syllable.) Otherwise, if a word follows, the L docks to the same vowel as the H preceding it (cf. Vance 1987:105 where the presence of these final contour tones is contested; but cf. also Pierrehumbert & Beckman 1988 passim which supports them; cf. also (5) above and the subsequent discussion); and if no word follows, there is instead an application of a rule of Tone Simplification, as in the analysis of Haraguchi (1977)). See below for all of these cases exemplified.

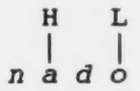
Tone Spread All tones spread to the right.

When the above examples are followed by *ga* High Tone Deletion rule is not applicable; after L-Docking and Tone Spread we have the results shown in (21).

(21)

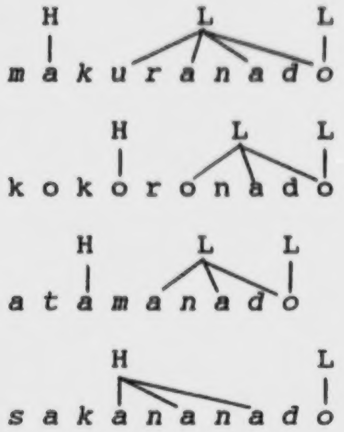


When these same nouns are followed by *nado*, we see the effect of High Tone Deletion; *nado* has an inherent H on its first syllable and a L on its second syllable:

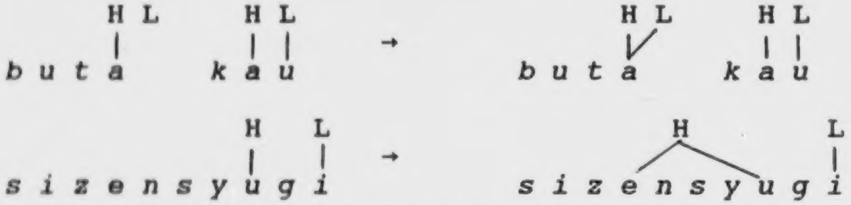


After High Tone Deletion and Tone Spread we have:

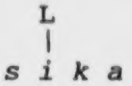
(22)


H L L
m a k u r a n a d o
H L L
k o k o r o n a d o
H L L
a t a m a n a d o
H L
s a k a n a n a d o

Note that the distinction between, e.g., *butá káu* and *sizensyúgi* (see (5) above) is maintained in this analysis. These will have the following derivations:

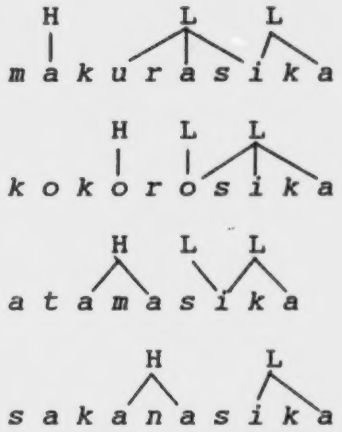

H L
b u t a
H L
k a u
→
H L
b u t a
H L
k a u
H L
s i z e n s y u g i
→
H L
s i z e n s y u g i

The most interesting particle is the one that "shifts its accent," *sika*. Assume *sika* is lexically low-toned on its first syllable:



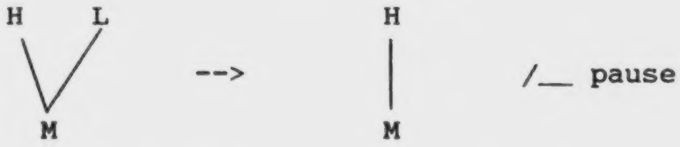
L-Docking and Tone Spread give the results shown in (23).

(23)

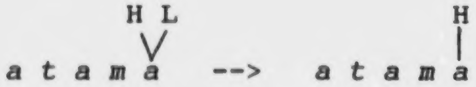

H L L
makurasika
H L L
kokorosika
H L L
atamasika
H L
sakanasika

Finally, the rules in (20) include a rule essentially identical to Haraguchi's Tone Simplification (Haraguchi 1977:18; Vance 1987:96). This rule removes a HL contour from words having (in traditional terms) final-syllable accent if no word follows:

(24) Tone Simplification


H L
M
-->
H
M
/__ pause

Thus:


H L
atama
-->
H
atama

Conclusion

I have argued, taking a cue from Pierrehumbert & Beckman 1988, that due to the facts of accent shift, Japanese accent should itself be interpreted as pitch, rather than as a diacritic on the basis of which pitch patterns are imposed by rule. The solution offered here is (a) tentative and (b) concerns only Tokyo Japanese. However I believe that consideration of accent in non-Tokyo dialects will strengthen the view that Japanese accent should be interpreted directly as pitch.

NOTES

* I appreciate the comments of Akira Yayamoto on an earlier draft of this paper. All errors are mine.

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RETRACTION IN CARIOCAN PORTUGUESE

Isaias Reis

Abstract: This study deals with retraction in Cariocan speech. I start by briefly explaining the purposes of this work, and mentioning some literature related to this phenomena not specifically in this same dialect, but in Brazilian Portuguese as a whole.
Later, I present the data collected in Rio de Janeiro using techniques adopted by linguists like Labov, who has also done fieldwork in sociolinguistics. As I present the data, I show not only the results from my sample, but also the statistical significance of these results in relation to the production rate of the feature studied here.
At the end, I critically evaluate the importance of this study.

Introduction and literature

This paper deals with the retraction phenomenon of the alveolar fricatives [s] and [z] in Cariocan Portuguese, the dialect used in Rio de Janeiro, Brazil and its correlation with selected social characteristics of the study's informants. No prior sociolinguistic study exists that focusses only on this phonological feature in this dialect; but, there have been studies on both European and/or Brazilian Portuguese phonology and other related areas which refer to this process. Therefore, it is worth looking at works by Mattoso Câmara (1976), Head (1964), Bortoni-Ricardo (1985), Shaw (1986), and Parkinson (1988) since in one way or another, they approach this process in the Portuguese language.

Before describing retraction, I introduce the consonant system of Brazilian Portuguese with 19 phonemes, excluding the semivowels /j/ and /w/, which is shown to be usually validated by linguists like Head (1964:138-64) and Bortoni-Ricardo (1985:38), among others. However, it should be

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emphasized that the main focus of this paper is going to be on the phonemes /ʃ/, and /ʒ/. See table 1.1 below.

Table 1.1 **Brazilian Portuguese Consonant Phonemes**

		Bilabial	Labio-dental	Dental	Alveolar	Palatal	Velar	Uvular
Plosives	voiceless	p		t			k	
	voiced	b		d			g	
Fricatives	voiceless		f		s	ʃ		χ
	voiced		v		z	ʒ		
Nasals		m			n	ɲ		
Laterals					l	ʎ		
Flap					ɾ			

Methodology and data elicitation

How to collect data for this study was my main concern at the beginning of this research. This is because the collection of reliable data is the foundation of any trustworthy investigation. Therefore, I aimed at selecting a reliable sample of the population and eliciting the data from this same sample. As could be expected, this dilemma is not unique, since other linguists producing similar sociolinguistic studies in the past faced the same problem of how to obtain accurate and useful sociolinguistic information. (Wolfram and Fasold, 1974:36; Modaressi, 1978:14)

As has already been mentioned, this research is aimed at accounting for the retraction of the sibilant [s] in Cariocan speech. This study intends to relate this phenomenon to one or more social factors, if any correlation exists. However, in order to establish such a correlation, it was necessary to take an impartial look at the population of Rio de Janeiro and decide what portion of the population would yield more reliable data for this purpose. One thing had to be taken into consideration: the fact that the extralinguistic factors chosen to isolate the sample for this study were of crucial importance for the successful outcome of this research.

In particular, I decided to use the extralinguistic correlates age, education, and sex as the basis of this study. It is expected that both age and education combined mostly decide certain alternations that one might have in language use. Sex is also included as one of the correlates, for according to a variety of previous studies females are known to have different speech features from males.

After having decided what factors were to be used to isolate the population for this research, it was necessary to find a representative number of subjects within this same population. Following Labov's idea of random sampling method for selecting informants, I decided on this same methodology that had already been proved to be reliable in other works by authors like Wolfram and Fasold.

I decided on the sex correlate with its two cells (males and females), the use of level of college education for the education correlate, and the following groups for the age correlate: 18-25, 26-39, and over 40 years old. Plus, I also decided to have six informants for each cell using previous works of reliable researchers in the study of social dialects such as Wolfram & Fasold (1974:40), who require the use of at least five subjects for each cell.

See table 1.2 for the different combinations using the correlates chosen for this study.

Table 1.2 Level of College Education

	MALE	FEMALE
18-25 years old	6	6
26-39 years old	6	6
over 40 yrs. old	6	6

Once this preliminary phase had been concluded, it was necessary to select the actual informants to be used in the study. Therefore, I contacted a large language institute in Rio de Janeiro with more than twenty branches throughout the city, and thousands of employees. I was granted permission to use a list of employees of the institution, from which most of the informants were randomly selected.

The research was conducted without many obstacles. Once the subjects were contacted, they were told what they were expected to do to cooperate with this work. 75% of the subjects were selected from this establishment, while the remaining 25% were selected from the staff of the high school from which I graduated, and also from the staff of other companies I had access to.

In order to elicit the data, I used Labov's *Sociolinguistic Patterns* (1972), pp. 70-109, as the basis of the interview set up created to collect data from the informants. I divided my interviews into three parts following Labov's model. In addition, the average duration of each interview was fifteen minutes.

These interviews were conducted over a period of three months throughout the summer of 1991 in the city of Rio de Janeiro, Brazil.

In the first part, the informants were to read a vocabulary list which contained thirty words with the phonological features being studied. This list was composed of high frequency words that I chose with the help of Brazilian newspapers, comic books, and dictionaries.

In the second part of the interview, the subjects were to read a passage which contained twenty-eight out of the thirty words in the vocabulary list. It should be pointed out that this text was composed after the vocabulary list had been chosen. The idea was to create a passage with as many words as possible from the vocabulary list, so that a comparison could be made between the production of the words in two different environments.

In the third part, both the interviewer and the interviewee were to engage in free conversation. At the beginning of the conversation, I was the one who carried the topic to give the subject some time to relax and use a style of speech that was expected to be as casual as possible. Later, I would let the interviewee carry the conversation. However, I would from time to time ask questions about the events being told in order to try to have the informant use a relaxed and informal speech style.

Each of the three parts of the interviews aimed at a different style of speech. As suggested by Labov (1972), the more formal the social context is, then the more formal the speech will be. Therefore, I expected to be exposed to a more formal speech style during the reading of the vocabulary list, to a sort of formal and casual style during the reading passage, and to an even more casual style during the free conversation. These expectations are in agreement with Labov's idea of having a hypothetical stylistic continuum with casual style at one end and formal style at the other. This same idea has also been used by other fieldworkers besides Labov.

All the interviews were entirely tape-recorded with the written consent of the participants, and all the three parts of the interview were later transcribed. There was an interval of not more than 30 seconds to 1 minute between each two parts of the interview. Since I am focusing my work on specific phonological features, I decided to use mixed phonetic transcription in this study. Therefore, I only phonetically transcribed the words' and sentences' fragments which contained the feature being studied: *diferente* [dʒi]feren[tʃi] 'different', *mas eu vi meu tio* ma[zew] vi meu [tʃi]o 'but I saw my uncle'.

Data analysis

For the sake of clarification, I provide tables containing results in numbers as well as in correspondent percentages. Following each table, I give a statistical analysis of the relevant data presented in the table comparing and contrasting all matching possibilities regarding the main correlates sex and age. T-scores are calculated to test the hypotheses that mean retraction increases from list to text, from text to conversation, and from list to conversation for various age/sex cohorts. T-scores are also calculated for statistically significant differences in retraction within environments by sex and age.

T-test scores indicate that the difference in the totals between the environments, disregarding any difference in sex or age supporting the theory that women retract more than men do, is statistically significant at the 10%

level. The calculated t values for retraction are: 5.25 (list-text), 1.35 (list-conversation), and 6.16 (text-conversation). The critical t value is 1.29.

When I first chose retraction of the sibilants [s] and [z] in Cariocan speech, I had in mind that the only allophones of /s/ would be the retracted voiceless postal-alveolar [ʃ] and its voiced counterpart [ʒ]. I did in fact find that some people will actually produce the alveolar fricatives [s] and [z] sometimes, and the postal-alveolar fricatives [ʃ] and [ʒ] other times. However, I also discovered that instead of only retracting [s] and [z] to a postal-alveolar position, some of the informants would also retract them sometimes further into either a uvular fricative [χ], or other times [Ø], *mas* [maχ] or [maØ] but. Besides, some informants would also produce the allophone [z] any time that there was a word boundary in which there was a word ending in the phoneme [s] preceded by a vowel sound and in which the following word started with a vowel sound, *mas eu* [maz'ew] 'but I'.

For the purpose of this study I discuss all the above possibilities as actual instances of retraction of the sibilants [s] and [z], but perform statistical analysis only in the occurrences without variants. Whenever presenting the numbers and correspondent percentages, I indicate what percentage is due to non-retraction, and what percentage is due to some other phenomena including the production of the uvular fricative [χ], [Ø], or the sibilant [z] in word boundary. And I also give the percentage of actual retraction.

For the sake of clarity, I ought to point out that in Portuguese the sibilants [s] and [z] can be represented in writing by different symbols like *s*, *ss*, *ch*, *x*, among others. However, not all environments yield opportunities for retraction. I believe that the fact that these sibilants have different written representations is an indication that some time in the history of Portuguese there was a merging of different sounds into these sibilants in some environments, causing distinctions among them to be neutralized in most environments. But this distinction was preserved by the written form and in the behavior of the sibilants in retraction environments. Therefore, this work does not deal with words using all the different forms to represent the sibilants being studied here, because not all the words with written sibilants allow for retraction.

Now, I look at the two sex cells (male and female) without regard to the influence of the age groups in the process of retraction. Since voicing does not appear to play a crucial role in the outcome of retraction, I do not take it into consideration.

When one looks at the vocabulary list, one sees that both males and females have 180 opportunities each to retract, out of which all of the different informants regardless of sex produce 164 (91.11%) retraction as a group. When looking at the passage, one can see that both men and women have 198 opportunities to retract; however, this time the male subjects retract 191 (96.46%) times, while the female subjects retract 195 (98.48%) times. This difference in retraction rate between men and women is somehow expected when one moves from a more formal speech style to a less formal one, since women tend to be more sensitive to language variations than men.

Once one looks at the free conversation part, one expects to see a raising in retraction, for this section is supposed to bring out the less formal speech style in any of the informants. Indeed, if one accepts as opportunities for retraction only those that allow a contrast between retraction and non-retraction, the production of retraction does raise. At this point, men produce 737 opportunities to retract, and they retract 730 (99.05%) times, while the women produce 722 opportunities out of which they retract 721 (99.86%) times. See table 1.3 below.

Table 1.3 **Retraction Males and Females**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	180	180	198	198	737	722
REAL	164	164	191	195	730	721
%	91.11%	91.11%	96.46%	98.48%	99.05%	99.86%

T-test scores indicate that the difference between individuals of different sexes within the same environment is not statistically significant at the 10% level. The calculated t values for table 1.3 are: 0 (male-female list), 1.18 (male-female text), and -0.29 (male-female conversation). The critical t value is 1.31.

T-test scores indicate that the difference between individuals of the same sex from the different environments is, with one exception, all statistically significant at the 10% level. The calculated t values for table 1.3 are: 3.37 (list-text males), 3.97 (list-text females), 0.93 (list-conversation males), 1.36 (list-conversation females), 6.05 (text-conversation males), and 3.56 (text-conversation females). The critical t value is 1.31.

However, if one considers the production of other allophones like [χ], [Ø], and [z] at word boundaries as opportunities to retract, one does not see an increase in the retraction rate as one looks at the free conversation. Instead, there is a decrease in retraction since men only retract 730 (79.17%) times out of 922 opportunities. In 185 (20.07%) of the remaining opportunities, the male subjects produce one of the other allophones, and the other 7 (0.76%) times these informants do not retract at all.

When one uses the same procedure to analyze the females' performance, one notices that the outcome is similar to the males'. Here, the females have 812 opportunities to retract, out of which they only retract 722 (88.92%) times. In 89 (10.96%) of the remaining opportunities, the women produce one of the other allophones, and only once (0.12%) they do not retract at all. See table 1.4 below.

Table 1.4 **Conversation**

	M	F
OPPORTUNITIES	922	812
REALIZATIONS	730	722
% OF REALIZS.	79.17%	88.92%
OTHER PRODUCTIONS	185	89
% OF OTHER PRODUCS	20.07%	10.96%
NON-RETRACTION	7	1
% OF NON-RETRACT.	0.76%	0.12%

Now, I consider retraction among the different age groups without taking into account the sex difference among the informants. As one considers the subjects from the age group 18-25, one notices that out of the 120 opportunities that the informants have they retract 116 (96.66%) of them. If one looks at the results of this same age group in the text, one notices that the subjects produce 129 (97.73%) opportunities out of 132 possible ones. This increase in retraction is again expected in moving from a more formal speech style to a less formal one.

Once one goes into the free conversation, one expects to see a rise in the percentage of retraction. If one only looks at the opportunities that allow a contrast between retraction and non-retraction, one notices that the informants of the age group 18-25 retract 100% of the 396 opportunities that they are given. Therefore, the hypothesis of an increase in the rate of retraction as one moves from a more formal to a less formal speech style still holds at this point of the data analysis. See table 1.5 below.

Table 1.5 **Age Group 18-25**

	LIST	TEXT	CONV.
OPP	120	132	396
REAL	116	129	396
%	96.66%	97.73%	100%

T-test scores indicate that the difference between individuals within the age group 18-25 from different environments is statistically significant at the 10% level. The calculated t values for table 1.5 are: 3.46 (list-text), 1.39 (list-conversation), and 4 (text-conversation). The critical value is 1.32.

However, if one looks at the production of other allophones like [χ], [Ø], and [z] at word boundaries as opportunities to retract, the retraction rate decreases as one moves to the free conversation part. Here, the informants are given 492 opportunities to retract out of which they retract 396 (80.49%) times. In the remaining 96 (19.51%) opportunities the subjects produce one of the other allophones shown above. See table 1.6 below.

Table 1.6 Age Group 18-25 w/Var.

	CONVERSATION
OPPORTUNITIES	492
REALIZATIONS	396
% OF REALIZATIONS	80.49%
OTHER PRODUCTIONS	96
% OF OTHER PRODUC.	19.51%

When one looks at the following age group (26-39), one notices a similar phenomenon to the one in the previous age group. In the vocabulary list, these informants have 120 opportunities to retract and they retract 105 (87.50%) of those. If one looks at the text, one sees that the subjects produce 130 (98.48%) opportunities out of 132 possibilities. Again an increase in retraction rate can be seen in this cell.

Then, moving into the free conversation cell one expects to see another increase in the retraction rate. Such an expectation is somewhat met, for even though the percentage is very similar (98.46%), we ought to consider the significant number of opportunities that the informants are given. At this point considering only the opportunities that allow for a contrast between retraction and non-retraction, the subjects retract 449 times out of 457 possibilities that they have. See table 1.7 below.

Table 1.7 Age Group 26-39

	LIST	TEXT	CONV.
OPP	120	132	457
REAL	105	130	449
%	87.5%	98.48%	98.46%

T-test scores indicate that the difference between individuals in the age group 26-39 in different environments is, with one exception, statistically significant at the 10% level. The calculated t values for table 1.7 are: 2.80 (list-text), -0.004 (list-conversation), and 3.06 (text-conversation). The critical t value is 1.32.

However, if one considers the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as opportunities to retract, once more the retraction rate drops in the free conversation just as in the previous age group. Here, the subjects produce 551 chances to retract, and they retract 449 (81.67%) of them. In 94 (17.06%) of the remaining 101 opportunities, these informants produce one of the other possible allophones presented above. And in the remaining 7 (1.27%) opportunities, no retraction takes place. See table 1.8 below.

Table 1.8 Age Group 26-39 w/Var.

	CONVERSATION
OPPORTUNITIES	551
REALIZATIONS	449
% OF REALIZATIONS	81.67%
OTHER PRODUCTIONS	94
% OF OTHER PRODUC.	17.06%
NON-RETRACTION	8
% OF NON-RETRACT.	1.27%

As one approaches the last age group (over 40 yrs. old), one notices that the retraction rate increases in a way similar to its increase in the previous age groups. It happens once one moves from a more formal speech style (vocabulary list) to a less formal speech style (free conversation). In the vocabulary list, the informants retract 107 (89.17%) opportunities out of the 120 possibilities that they have. In the text, the subjects produce 127 (96.21%) opportunities out of 132 possibilities.

During the free conversation, there is an increase in the retraction rate if one considers as opportunities only those which allow a contrast between retraction and non-retraction. Here, the informants have 606 opportunities and they retract 100% of them. See table 1.9 below.

Table 1.9 Age Group Over 40

	LIST	TEXT	CONV.
OPP	120	132	606
REAL	107	127	606
%	89.17%	96.21%	100%

T-test scores indicate that the difference between individuals in the age group over 40 yrs. old in different environments is statistically significant at the 10% level. The calculated t values for table 1.9 are: 3.71 (list-text), 2.16 (list-conversation), and 4.17 (text-conversation). The critical t value is 1.32.

However, if one considers the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as possibilities for retraction, once again the retraction rate drops at this part as it did in the two previous age groups. The informants have 691 opportunities to retract, and they only retract 606 (87.70%) of them. The remaining 85 (12.30%) opportunities are produced as one of the other allophones mentioned above. See table 1.10 below.

Table 1.10 Age Group Over 40 w/ Var

	CONVERSATION
OPPORTUNITIES	691
REALIZATIONS	606
% OF REALIZATIONS	87.70%
OTHER PRODUCTIONS	85
% OF OTHER PRODUC.	12.30%

If one looks at table 1.11 below, one can see, in a more explanatory way, the difference in retraction without counting the variants among individuals in the different age groups within the same environments.

Table 1.11 Retraction Different Age Groups without Variants

	LIST			TEXT			CONVERSATION		
AGE	18-25	26-39	over 40	18-25	26-39	over 40	18-25	26-39	over 40
OPP	120	120	120	132	132	132	396	457	606
REAL	116	105	107	129	130	127	396	449	606
%	96.66%	87.5%	89.17%	97.73%	98.48%	96.21%	100%	98.46%	100%

T-test scores indicate that the difference between individuals in the different age groups within the same environment is not statistically significant at the 10% level. The calculated t values for these different age groups are: 1.06 (18-25/26-39 list), -0.39 (18-25/26-39 text), 0.44 (18-25/26-39 conversation), 1.25 (18-25/over 40 list), 0.63 (18-25/over 40 text), 0 (18-

25/over 40 conversation), -0.18 (26-39/over 40 list), 1.12 (26-39/over 40 text), and -0.44 (26-39/over 40 conversation). The critical t value is 1.32.

Now, I look at retraction taking into account both sex and age correlates. As one looks at the age group 18-25, one sees that in the list all the informants have 60 opportunities to retract. Here, the males retract 100% of the possibilities. However, the females only retract 56 (93.33%) opportunities. These results may lead one to think that males tend to retract more than females, but when one looks at the text one sees that the females retract more than males this time. The males retract 64 (96.96%) opportunities out of 66 possible ones, while the females retract 65 (98.48%) opportunities out of the same possible number of retraction. Since the retraction rate increases as one moves from the list to the text, it is expected that this rate increases once more as one looks at the free conversation.

Indeed, it does happen if one takes into consideration only those opportunities which allow for a contrast between retraction and non-retraction. Here, men retract 100% of the opportunities that is equivalent to 112 possibilities. At this point, women also retract 100% of their opportunities, equivalent to 284 possible productions. See table 1.12 below.

Table 1.12 **Age Group 18-25 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	112	284
REAL	60	56	64	65	112	284
%	100%	93.33%	96.96%	98.48%	100%	100%

T-test scores indicate that the difference between individuals of different sexes within the age group 18-25 and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: -1 (male-female list), 0.2 (male-female text), and 0 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group 18-25 in all the different environments is not statistically significant at the 10% level.. The calculated t values for this age group are: -1 (list-text males), 1 (list-text females), 0 (list-conversation males), 1 (list-conversation females), 1 (text-conversation males), and 1 (text-conversation females). The critical t value is 1.37.

However, when one looks at the production of the other possible allophones [χ], [Ø], and [z] at word boundaries as possibilities for retraction, retraction rate drops during free conversation. This time, the male informants have 165 opportunities to retract and they only retract 112 (67.87%) of them, while the remaining 53 (32.13%) opportunities are produced as one of the other possible allophones already mentioned above. Even though the females also drop their retraction rate during the free conversation, it is not as drastic as the males'. Here, women have 327 opportunities to retract and they produce 284 (86.85%) retractions, while the remaining 43 (13.15%) opportunities are produced as one of the other possible allophones. See table 1.13 below.

Table 1.13 **Age Group 18-25 Conv. w/Var.**

	M	F
OPPORTUNITIES	165	327
REALIZATIONS	112	284
% OF REALIZATIONS	67.87%	86.85%
OTHER PRODUCTIONS	53	43
% OF OTHER PRODUC.	32.13%	13.15%

In the next age group (26-39), the male subjects retract more than the female subjects in the vocabulary list. Both males and females have 60 opportunities to retract; however, the males retract 53 (88.33%) of them while the females retract 52 (86.66%) times. But just as with the previous age group, the situation proves to be different as one moves to the text. This time both men and women have 66 opportunities to retract and both males and females retract 65 times, equivalent to 98.48% of the total number of possibilities. Since retraction rate rises as one moves from the list to the text, one expects to see it rise again during the free conversation.

In fact, if one looks at the opportunities that only yield a contrast between retraction and non-retraction, one is surprised with the results of the male informants. Here, the males' retraction rate drops compared to the text, for they retract 277 (97.53%) times out of the total 284 opportunities. But as can be seen, this drop in the retraction rate is not significant at all because it is not even equivalent to a 1% drop, which suggests that this feature is a high frequency one among men in the age group 26-39. Unlike the males, the females retract more here than they do in both the list and the text as they produce 172 (99.42%) opportunities out of 173 possible ones. See table 1.14 below.

Table 1.14 **Age Group 26-39 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	284	173
REAL	53	52	65	65	277	172
%	88.33%	86.66%	98.48%	98.48%	97.53%	99.42%

T-test scores indicate that the difference between individuals of different sexes within the age group 26-39 and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: - 0.10 (male-female list), 0 (male-female text), and 0.04 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group 26-39 in the different environments is, with one exception, not statistically significant at the 10% level. The calculated t values for this age group are: 0.99 (list-text males), 1 (list-text females), 2.91 (list-conversation males), 0.30 (list-conversation females), -0.08 (text-conversation males), and 0.02 (text-conversation females). The critical t value is 1.37.

However, as one looks at the production of the allophones [χ], [Ø], and [z] at word boundaries as actual opportunities to retract, the retraction rate drops even more for the males and also drops for the females. However, the decrease in this age group is not as drastic as it is in the previous age group

(18-25). This time the males have 362 opportunities but they only retract 277 (76.52%) of them. Out of the remaining 85 opportunities, they produce one of the other possible allophones shown above 78 (21.55%) times, while they do not retract the other 7 (1.93%) remaining opportunities. At this point, the females have 189 opportunities and they retract 173 (91.53%) of them, while in the remaining 16 opportunities the females produce one of the other allophones 15 (7.94%) times, and only once (0.53%) they do not retract at all. See table 1.15 below.

Table 1.15 Age Group 26-39 Conv. w/Var.

	M	F
OPPORTUNITIES	362	189
REALIZATIONS	277	173
% OF REALIZATIONS	76.52%	91.53%
OTHER PRODUCTIONS	78	15
% OF OTHER PRODUC.	21.55%	7.94%
NON-RETRACTION	7	1
% OF NON-RETRACT.	1.93%	0.53%

Finally, one can look at the last age group and see that, unlike in the previous age groups, here the females retract more than the males do in the vocabulary list. They all have 60 opportunities to retract; however, the males retract 51 (85%) times, while the females retract 56 (93.33%) times. As one moves to the text, one notices that there is an increase in the retraction rate of both men and women. In this part, the male informants retract 62 (93.93%) times out of 66 opportunities, while the female informants retract 65 (98.48%) times out of the same number of opportunities that men have.

As one observes the free conversation speech style of both men and women only taking into account those opportunities that yield a contrast between retraction and non-retraction, one sees an increase in retraction. Here, men and women increase their rate to 100%. The males retract all 341 opportunities that they have, and the females retract all 265 opportunities that they have. See table 1.16 below.

Table 1.16 **Age Group Over 40 Yrs. Old**

	LIST		TEXT		CONVERSATION	
	M	F	M	F	M	F
OPP	60	60	66	66	341	265
REAL	51	56	62	65	341	265
%	85%	93.33%	93.93%	98.48%	100%	100%

T-test scores indicate that the difference between individuals of different sexes within the age group over 40 yrs. old and in the same environment is not statistically significant at the 10% level. The calculated t values for this age group are: 0.82 (male-female list), 1.34 (male-female text), and 0 (male-female conversation). The critical t value is 1.48.

T-test scores indicate that the difference between individuals of the same sex within the age group over 40 yrs. old in the different environments is, with two exceptions, not statistically significant at the 10% level. The calculated t values for this age group are: 1.14 (list-text males), 1 (list-text females), 1.96 (list-conversation males), 1 (list-conversation females), 2 (text-conversation males), and 1 (text-conversation females). The critical t value is 1.37.

However, if one looks at the production of the allophones [χ], [Ø], and [z] at word boundaries as opportunities to retract, the retraction rate drops as in the previous age groups. Here, the male subjects have 395 opportunities to retract and they retract 341 (86.33%) of them. The remaining 54 (13.67%) opportunities are produced as one of the above allophones. As one looks at the females' results, one sees that the women have 296 opportunities to retract and they retract 265 (89.53%) of them. The remaining 31 (10.47%) possibilities are produced as one of the allophones mentioned above. See table 1.17 below.

Table 1.17 **Age Group Over-40 Conv. w/Var.**

	M	F
OPPORTUNITIES	395	296
REALIZATIONS	341	265
% OF REALIZATIONS	86.33%	89.53%
OTHER PRODUCTIONS	54	31
% OF OTHER PRODUC.	13.67%	10.47%

The results regarding retraction production in Cariocan Portuguese can be better seen if all are placed in one single table. It can be noticed that as expected there is a consistent increase in the retraction rate as one moves from a more formal speech style (vocabulary list) to a less formal speech style (free conversation). See table 1.18 below.

Table 1.18 **Retraction without Variants**

	LIST						TEXT						CONVERSATION					
	18-25		26-39		OVER 40		18-25		26-39		OVER 40		18-25		26-39		OVER 40	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
OPP	60	60	60	60	60	60	66	66	66	66	66	66	112	284	284	173	341	265
Real	60	56	53	52	51	56	64	65	65	65	62	65	112	284	277	172	341	265
%	100	93.33	88.33	86.66	85	93.33	96.96	98.48	98.48	98.48	93.93	98.48	100	100	97.53	99.42	100	100

However, one should also look at the other allophones that occur during the free conversation speech style instead of retraction; therefore, the data in table 1.19 are very helpful for this purpose.

Table 1.19 Retraction with Variants during Conversation

	18-25		26-39		OVER 40	
	M	F	M	F	M	F
OPPORTUNITIES	165	327	362	189	395	296
REALIZATIONS	112	284	277	173	341	265
% OF REALIZATIONS	67.87%	86.85%	76.52%	91.53%	86.33%	89.53%
OTHER PRODUCTIONS	53	43	78	15	54	31
% OF OTHER PRODUC	32.13%	13.15%	21.55%	7.94%	13.67%	10.47%
NON-RETRACTION	-	-	7	1	-	-
% NON-RETRACTION	-	-	1.93%	0.53%	-	-

Comments

Retraction is a high-frequency feature in Cariocan Portuguese. As one observes this feature, one sees that its percentage is very similar between men and women; however, in general women tend to retract a little more than men do, as can be seen in table 1.3, p. 9.

However, it should also be noticed that retraction is not unique to Cariocan Portuguese. This feature is present not only in other Portuguese dialects, but also in dialects of the Spanish speaking world. For instance, Panamanian Spanish has the same uvular fricative variant [χ] that Cariocan Portuguese does. Therefore, a word like *mismo* 'same' will be produced as [miχmo].

When studying retraction in Cariocan Portuguese, one ought to approach the data in two different ways. First, one should analyze the data in the list, the text, and the free conversation including only the opportunities that allow a contrast between retraction and non-retraction. Second, one should look at the data in the free conversation that allows for the production of the variants [χ], [Ø], and [z] at word boundaries as actual opportunities for retraction.

In the first part, the rate of retraction is high because very rarely does an informant produce an allophone different from the ones in the contrast between retraction and non-retraction. Plus, I deal with the opportunities that only allow a contrast between retraction and non-retraction during the free conversation speech style.

However, in the second part when I analyze the free conversation speech style that includes the production of the allophones [χ], [Ø], and [z] at word boundaries as actual opportunities for retraction, the retraction rate drops compared to the first part. I choose to consider the production of these different allophones as possibilities for retraction because these variants work in combination, for sometimes a single informant produces them in the same environment, like the word *mas* ‘but’ that is produced as [maʒ], [maχ], [maØ], or [maz]. Thus, I choose to take into consideration these different productions, for they show to be relevant in the final results.

Further, if I do not consider any of the allophones [χ], [Ø], and [z] at word boundaries, I cannot speculate about a relation between this feature and some social factor. It happens because the retraction rate always increases when one moves from the list to the free conversation as long as one considers as opportunities for retraction only those that provide a contrast between retraction and non-retraction.

However, once one considers the occurrence of the other allophones as possibilities for retraction, it is possible to see a relation not between retraction and some social factor, but between the percentage of the production of the allophones [χ], [Ø], and [z] at word boundaries, and the factors age and sex.

I speculate that the production of these variants as a group mixed with retraction seem to associate an individual to a younger male speech style. I draw this conclusion from the data in this area. See table 1.20 below.

Table 1.20 Free Conversation's Variants Production

	18-25		26-39		OVER-40	
	M	F	M	F	M	F
REAL	53	43	78	15	54	31
%	32.13%	13.15%	21.55%	7.94%	13.67%	10.47%

But I have to point out that the results above are not statistically significant according to the results of the t-test using the 10% level of significance.

These variants account for 32.13% of the males' retraction opportunities in the age group 18-25; that is more than twice the percentage of the females in the same age group. In the older age groups, one notices that the production of these variants drop, as for instance in the male age group over-40 where it drops to less than 14%.

Therefore, I propose that the production of these variants mixed with retraction is more characteristic of young males between ages 18 and 25. It seems that as a man grows older, he produces less of these variants if he wants to have his speech style to be associated with the speech style of a more mature man; however, a man produces more of these variants as he grows older if he wants to reverse the effect. However, I cannot prove that these older male informants in the age group over-40 used to have the mixture proposed above when they were younger. This might be a new phenomenon, and the young subjects who produce this will continue to produce it when they are older. In summary, I cannot propose and adequately defend a theory regarding these features with the restricted amount of data that I have for my work.

Conversely, women seem to produce as little as possible of these variants, for females perhaps notice that the excessive production of these variants mixed with retraction may associate an individual's speech style with a younger male speech style. However, this assertion is also speculation, for I cannot statistically support it with the restricted data that I have.

I also speculate that retraction is a declining feature in the dialect being studied here, for this feature is being alternated with the variants shown before by most of the informants from the younger generation, and also by individuals of older generations. This might suggest that as the older generations die, retraction will eventually die out and merge with the other variants.

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THE BRAHMI FAMILY OF SCRIPTS AND HANGUL:
Alphabets or Syllabaries?

Christopher Wilhelm

ABSTRACT: A great deal of disagreement exists as to whether the writing systems of the Brahmi family of scripts and the Hangul script of Korea should be classified as alphabets or syllabaries. In fact, each system exhibits a significant amount of characteristics of both types, and neither label entirely does either of them justice.

Linguists studying the writing systems of the world have traditionally classified them according to three categories, those of logographic, syllabic, and alphabetic scripts. The Brahmi writing systems found throughout the Indian subcontinent and Southeast Asia as well as the Korean Hangul script, however, both defy classification. The two have in common a mixture of syllabic and alphabetic characteristics that has spawned vigorous disagreement among the scholars discussing them. For example, Lambert (1953) refers to the Devanagari script used to write Sanskrit and its daughter languages as a syllabary, Shamasastry (1906) as an alphabet, Coulson (1976:3) describes it as 'halfway in character between an alphabet and a very regular syllabary,' while Cardona (1987) simply calls it a script and avoids the issue in his overview of Sanskrit. An examination of the various alphabetic and syllabic aspects of these writing systems is therefore in order, and indeed the results of such an investigation would seem to indicate that neither label fully does justice to them.

The Brahmi family of scripts, so named for their descent from the Brahmi script which is first attested in the third century B.C.,[1] are distinctive in having in common, to a greater or lesser extent, a number of characteristics that begin to surface in their progenitor. Foremost of these is what Masica (1991:136) hails as 'The great innovation of the Brahmi script, its indication of vowels other than A ([ə]) by modifications added to the basic consonant symbols.' The vowel corresponding to [ə] itself is regarded as assumed or inherent to each consonant in its most basic form, and any vowel pronounced after the consonant is represented by a marker appended in some fashion to the consonantal symbol. Vowels also tend to have distinct allographs when they occur in an initial position. A consonant standing alone must be so indicated by a special diacritic, and consonants otherwise not followed by any vowel, as in consonant clusters, tend to appear in some altered or abbreviated form.

Descendants of the Brahmi script are most commonly associated with the Indic and the Dravidian languages of India. They are also represented in the two primary members of the Tibeto-Burmese family, as well as in significant members of the Khmer and Kam-Tai families. Brahmi-derived scripts have also made their way to such scattered locales in time and place as Sumatra, the Philippines, and the extinct Tokharian language.[2] The most widely known member of this family of scripts, however, is the Devanagari script, most particularly as it is employed in writing Sanskrit. It was also at the hands of the grammarians who adapted Devanagari to the writing of Sanskrit that the aforementioned qualities peculiar to Brahmi writing systems become perhaps most pronounced. While an analysis of Brahmi scripts should consider a representative sampling of them, Sanskrit Devanagari is generally taken as the most representative case, and is therefore the best point at which to begin.

The characters of the Devanagari script are elegant not only in appearance but also, in Sanskrit at least, in operation as well.As mentioned above, Devanagari consonantal characters are considered to include in their basic, 'unmarked' form the vowel [a], corresponding to [ ] in Sanskrit and most of its daughter languages, pronounced after the articulation of the consonant itself. Thus, the characters for Sanskrit's voiceless unaspirated plosives, क ,च, ट , त , and प , stand for the syllables [ka], [ca], [ṭa], [ta], and [pa], respectively. When the consonant has no following sound, as utterance-finally or in isolation, a diacritic known as a *virāma* is placed to the lower right of the character, so that च् and ट् indicate [c] and [ṭ] alone.

The vowel [a] is overtly indicated only in an initial position, by the character अ . All other vowels and diphthongs have one allograph used initially, and another, smaller one when pronounced following a consonant. These latter allographs may be attached to the consonantal sign at almost any portion of it, such as to the right, as for ता [tā], ती [tī]; below, as in तु [tu], तू [tū], तृ [tṛ]; above, as in ते [te], तै [tai]; above and to the right, as for तो [to], तौ [tau]; and even to the left of the consonantal symbol, as in ति [ti]. The signs for these vowels in an initial position, on the other hand, are आ [ā], इ [i], ई [ī], उ [u], ऊ [ū], ऋ [ṛ], ए [e], ऐ [ai], ओ [o], औ [au].[3] When consonantal [r], र् , an alveolar flap, is followed by [u] or [ū], these, too, appear to the right of the consonantal sign, seemingly turned ninety degrees: रु , रू .

Two diacritics frequently modify vowels. The anusvāra (अं) indicates vowel nasalization and is customarily transcribed, e.g., -aṃ. The visarga (अः ; h) is an aspirated echo of the vowel it modifies (Coulson 9).

Although Devanagari does not readily lend itself to the representation of consonant clusters, such clusters are quite common in Sanskrit. These are represented by ligatures known as conjunct consonants, wherein two or more consonantal characters are modified to fit together in a larger conglomeration. The two most common means of effecting these combinations are horizontally, which generally involves deleting the vertical stroke where present for non-final members of the clusters, as in स्त [sta], from स् [s] and त [ta], or ब्य [bya], from ब् [b] and य [ya]; and vertically, as in ङ्ग [ŋga], from ङ् [ŋ] and ग [ga], or द्व [dva], from द् [d] and व [va]. Some combinations may be made in either fashion, as in च्च or च्च [cca], although the advent of printing has made the former method more desirable. These conjuncts can appear quite formidable and bewildering; Coulson presents approximately 250 of them (22-4) and does not state whether this list is exhaustive, and he and Lambert both offer examples of clusters of four consonants: ण्ड्र्य [ṇḍrya] (Coulson 23) and र्ष्ट्य [rṣṭya] (Lambert 35). Two conjuncts, क्ष or क्ष [kṣa] and ज्ञ [jña] bear little or no resemblance to the signs for their component members (ष् [ṣ], ज [j], ञ [ñ]).

Conjuncts involving the flap [r] are of particular interest. [r] following a consonant is represented by a short diagonal mark to the lower left of the consonantal character, as in क्र [kra]. However, when [r] precedes a consonant, it is indicated by a small hook above and as far to the right of the character as possible, as in र्त [rta]. In syllables involving the diacritic anusvāra, this hook appears even to the right of it, as in यज्ञार्थं [yajñārt^{h}am], 'for sacrificial purposes.'

A question commonly invoked in determining whether a script might be considered alphabetic or syllabic is whether or not its most basic unit corresponds more or less with the phoneme; that is, whether it approaches an ideal principle of 'one sign per phoneme.' (Gaur 1985:119; see also Kim 1987:888-9). However, this principle would seem to be for the most part irrelevant in Sanskrit Devanagari. Two points support this view. The first is what Masica (146) refers to as 'phonemic overkill' in the inventory of characters. He argues that the *visarga* is in fact an allophone of /s/ (स्), and argues that the velar and palatal nasals (ङ् and ञ्) were 'largely predictable' in their distribution. It is true that they virtually never appear apart from a homorganic obstruent, and this would tend to indicate that they are less than full-fledged phonemes in Sanskrit and may have been included in the script to provide symmetry by nasals with the velar and palatal series of stops along with those of the retroflex, dental, and labial series (ण् , न् , म् respectively).

The second of these points is embodied in the phenomenon of sandhi. Devanagari was adapted to Sanskrit with the goal of reproducing as faithfully as possible exact pronunciation (see Coulson 31-2), and the term *sandhi*, meaning 'juncture,' refers to all of the assimilation in voicing and place of articulation among consonants and the coalescence and glide formation among vowels at word boundaries and between lexical stems in compounding. A word-final segment analyzable phonemically as /t/ may be written, with pronunciation in mind, as त् , द् , च् , ज् , ट् , ड् [ḍ], न् , or ल् [l], depending on the initial sound of the following word. Words are not separated from one another within clauses in written Sanskrit unless the first word ends in a vowel and the second begins with a consonant, or the first word ends with a *visarga* and the second begins with a voiceless consonant, or unless the regular and predictable sandhi rules result in hiatus between two vowels. In attempting to separate strings of words into their component members, students of Sanskrit must work their way backward through these sandhi rules. The rules for sandhi given their predictability and their application across word boundaries, bear a striking resemblance to the post-lexical rules of the theory of lexical phonology (see J. T. Jensen 1990:84-7, 174-6). It must be concluded from the practices of regular

Sanskrit orthography that the script was not adapted to the language with units corresponding to phonemes in mind. The implications of this fact would seem to be that, while the orthography was organized to capture each sound as it passes from the lips of the speaker, these individual sounds were not considered meaningful in and of themselves. One is therefore left with no unit of analysis between the phonetic segment and the syllable conceived as a vowel preceded by any number of consonants (see Coulmas 1989:41-2).

A sample of written Sanskrit, accompanied by a transcription and translation, follows (adapted from Katzner 174):

अस्ति हस्तिनापुरे कर्पूरविलासो नाम रजकः।

तस्य गर्दभो ऽतिभारवाहनाद्दुर्बलो मुमूर्षरिवाभवत्।

ततस्तेन रजकेनासौ व्याघ्रचर्मणा प्रच्छाद्यारण्य-

समीपे सस्यक्षेत्रे मोचितः। ततो दूरादवलोक्य

व्याघ्रबुद्ध्या क्षेत्रपतयः सत्वरं पलायन्ते।

स च सुखेन सस्यं चरति।

Asti hastināpure karpūravilāso nāma rajakaḥ.
Tasya gardabho >tibhāravāhanāhurbalo
mumūrṣarivābhavat. Tatastena rajakenāsau
vyaghracarmaṇā pracchādyāraṇya samīpe
sasyakṣetre mocitaḥ. Tato dūrādavalokya
vyāghrabuḍḍhyā kṣetrapatayaḥ satvaraṃ
palāyante. Sa ca sukhena sasyaṃ carati.

In Hastināpura there was a washerman named Vilasa. His donkey was near death, having become weak from carrying excessive burdens. So the washerman covered him with a tiger-skin and turned him loose in a cornfield near a forest. The owners of the field, seeing him

> from a distance, fled away in haste, under the notion that he was a tiger.

Most of the modern Indic languages employ Brahmi scripts, and indeed most of these scripts are fairly closely related to Devanagari. Aside from some relatively minor languages, however, only Hindi, Marathi, and Nepali are generally written in the Devanagari script. Masica explains this great number of different scripts by noting that there was no unifying political or religious force, such as the Roman Empire and Catholic Church in western Europe or the Koran in the Islamic world, over most of Indian history (137), so that the sundry language communities tended to develop their own scripts. Then, 'What may have been the high water mark of script differentiation unfortunately coincided with the introduction of printing, which had a tendency to freeze and accentuate many minor differences (144).' He also observes that in the linguistic hodgepodge that is India, languages are under tremendous pressure to maintain a distinct identity, so that 'there is a widespread feeling that a self-respecting language should have its own script. (27).' Even Hindi and Nepali have some divergent orthographic customs for the script they share (145). For the purposes of this discussion, the Devanagari of Hindi and Marathi will be considered, along with the closely related but visually more distinct Gujarati script and the somewhat less closely related Bengali script.

The Devanagari characters as used for Hindi and Marathi are essentially identical to those of Sanskrit.[4] The most significant innovation in shape involves the importation of non-Indic segments such as the Arabic [q] and [f] from Arabic as well as Persian and English. In these cases a subscript dot is added to the characters phonetically closest to the new sounds. Thus क [ka] becomes क़ [qa] and फ [p^{h}a] becomes फ़ [fa].

There are, however, two more fundamental changes in the script, pertaining to the manner in which it is mapped onto the spoken language. The first of these renders the script less imposing in appearance. Sandhi rules are no longer taken into consideration, so that separation between words is always maintained. Such rules are not effective within words, either; the modern languages under discussion allow two consecutive vocalic syllable nuclei within a word, with the second represented by the initial allograph, as in कई [kaī̈] 'several,' or बुआ [buā̈], 'paternal aunt.' In Sanskrit, any such sequence would have been coalesced together, or reduced to a glide-vowel sequence. While individual words in Hindi and Marathi are easily distinguishable, the pronunciation of these words is rather less accessible to the non-native reader than in Sanskrit. In some, but not all environments, the inherent vowel [a] is deleted. In these instances, a consonantal character stands for its corresponding segment alone, and no additional diacritic is necessary. The most easily predictable environment is word-finally, as in पर [par] 'but,' or क्षण [kṣaṇ] 'moment.' Word-medial environments are less obvious. The best discussion of this phenomenon is in Ohala (1983). She argues that he most basic environment for deletion of the inherent vowel is VC_CV (121). This is fairly readily apparent where the two vowels are overtly marked, as in कोहनी [kohnī] 'elbow,' or चुनना [cunnā] 'to choose.' More troublesome are cases where one or both of the the vowels are also the inherent vowel. Ohala argues that the deletion rule then applies right to left from a morpheme boundary. She bases her conclusion on such data as the following:

> The rare word pronounced [godnəśīn] 'adopted' is derived from /god+nəśīn/ 'lap+sitter' but is written in Devanagari as गोदनशीन (godənəśīn). If a speaker knows the word is /god+nəsin/ he will not pronounce the द (d) of /god/ as a CV syllable (i.e., [də]), but will correctly render it as simply the consonant [d]; he will also retain the /ə/ in /nəsin/. However, if he doesn't know the true morpheme boundary then he applies his ə-deletion rule from right to left and pronounces it as [godənsin] (124).

Conjunct consonants do occur in Hindi, but they are rare relative to Sanskrit. Lambert indicates that they do not occur across morpheme boundaries (77); when they do appear, they are often in environments where ə-deletion cannot be predicted by Ohala's rule, such as word-initially: स्नेह /sneh/ 'love.' However, they also quite frequently occur where ə-deletion is predictable, as in कच्चा /kacca/ 'raw, uncooked,' टैक्सी /ṭaiksi/ 'taxi,' or जन्मदिन /janmadin/ 'birthday.' Many of these are geminates, and Lambert takes pains to make clear that ə-deletion cannot occur in loanwords from other languages, particularly Sanskrit (78-83). Nevertheless, while anyone who has internalized Ohala's rule should be able to read written Hindi (and also Marathi and Gujarati, as Lambert's discussion of inherent vowel-deletion for these languages in virtually identical for those languages; see 62, 96-7, 139-40), it clearly cannot be a reliable guide in spelling a word one knows only from hearing it pronounced.

A sample of written Hindi, reflective of the differences in Devanagari from its use in Sanskrit, follows with a transcription and translation (adapted from Katzner 176):

गोबर न और कुछ न कहा। । लठी कन्धे
पर रखी और चल दिया। होरी उसे जाते
देखता हुआ अपना कलेजा ठंढा करता रहा।
अब लडके की सगाईने देर न करनी चाहिए।

Gobar na aur kuch na kahā. Lāṭhī kanghe par rakhi aur cal diyā. Horī use jāte dekhtā huā apnā kalejā ṭhanḍha kartā rahā. Ab laṛke kī sagāī ne der na karnī cāhie.

Gobar said nothing more. He put his staff on his shoulder and walked away. Hori looked with pride at the receding figure of his son. He was growing into a fine young man.

The Gujarati script is fairly close in appearance to the Devanagari. It differs chiefly in the absence of the distinctive headstroke. The phonotactics of Gujarati are quite similar to those of Hindi, except that consecutive vowels are not allowable within a word. A sample of written Gujarati follows, accompanied by a translation and transcription, adapted from Katzner (188):

માનવીના હૈયોને નંદવામાં વાર શી!
અધ ખોલ્યા ખોલ હૈ,

થોકે અબોલકે
પોચાશા હૈયાને પીંજવામાં વાર શી!

Mânvīnā haiyone nandvāmā̃ var śī!
adhbolyā bolke,
thoke abolke,
pocāsā haiyāne pī̃jvāmā̃ vār śī!

How little it takes to break the human
heart!
A word half spoken,
A word unspoken,
How little it takes to bleed that heart!

The appearance of the the Bengali script is quite different from that of the Devanagari; broadly speaking, its characters can be described as tending toward a rather triangular shape. The Bengali language itself differs from the majority of Indic languages in that its vowel corresponding to ə has drifted in articulation to [ɔ]. This then is its inherent vowel, and so the consonantal character ত is taken to stand for [tɔ]. The vowels ঐ and ঔ, corresponding to Devanagari ऐ and औ ([ai] and [au]), are pronounced [oi] and [ou]. One noteworthy feature of the Bengali script is that, in addition to তি [ti], other non-initial vowels are written before the consonantal character: তে [te], তৈ [toi]. Two others are written to either side of it: তো [to], তৌ [tou]. Signs for other non-intial vowels are not greatly different from their Devanagari counterparts

Unlike Hindi words, whose pronunciations are predictable from their written form but not the reverse, in Bengali neither is fully predictable, since inherent vowel-deletion is not regular. Thus, the written form মত, orthographically [mɔtɔ], may denote either /mɔt/ 'idea, opinion,' or /mɔto/ 'similar, like' (Lambert 185). Further compounding difficulties, as is apparent from the latter example, the inherent vowel may also be pronounced [o], so that it overlaps with ও [o]. Ray et al. (1966:15) states that there 'are no simple rules' for this alternation of ɔ/o/0, and Lambert (185) asserts that the proper realization can be understood 'only by a knowledge of spoken Bengali.'

A sample of written Bengali, with a transcription (albeit without taking into account the shift in pronunciation of the inherent vowel) and translation follows (from H. Jensen 379-80):

পূর্ব্ব কালের ধনবানেরদের মধ্যে আমদ্‌সুলতান
নামে এক জন ছিলেন তাহার প্রচুর ধন ও
ঐশ্বর্য্য এবং বিস্তর সৈন্যসামন্ত ছিল .

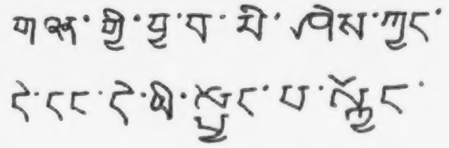
> Purbbakakler dhanbanermadhye, Amad Sultan name ek jan chilen. Tahar pracur dhan o aswarjya ebambistar sainyasamanta chila.
>
> Among the rich in the old days was a man called Amad Sultan. He possessed great wealth and also a numerous army.

Certain features of some non-Indic Brahmi scripts are worth noting, at least in passing. Of note in the Tamil script is the _puḷḷi_. This is a raised dot corresponding in function to the Devanagari _virāma_, but, unlike its counterpart, as Stevens (1987:734) observes, 'The use of the _puḷḷi_ is instrumental in the correct representation of cònsonant clusters: இப்ப represents _ippa_ 'now,' not *_ipapa_.' Thus, in Tamil conjunct consonants are unnecessary.

The Thai script offers an example of diacritics used to indicate a fairly complex tone system. A consonant sign falls into one of three classes, and this class in conjunction with any of four diacritics or the absence of one determines the tone for that consonant's syllable (Hudak 1987:766). Thai also appears to be unusual among Brahmi scripts in that consonantal characters have no inherent vowel; น stands simply for /n/. Vowel indicators may appear below, above, to the left, to the right, or on both sides of the consonant: นุ /nu/, นิ /ni/, นา /na/, โน /no/, เนา /nao/. The representation of /nai/ is particularly complex: ไนใน (H. Jensen 391).

In any comparison between the Brahmi family of scripts and the Korean Hangul script, that of the Tibetan language is particularly worthy of note as it is often mentioned as possibly having had some influence on the shaping of Hangul (Gaur 85, Diringer 1968:354, Lee 1983:7). In this connection perhaps its most significant feature is the tsheg, a syllable-ending point. Otherwise, a narrow space separates each consonant character. Beyond this, it is fairly similar to the Devanagari script in appearance. In contrast with Devanagari, however, Tibetan syllables contain a staggering number of apparently superfluous consonantal signs called pre-, super-, sub- and postscripts, relics of the changes in spoken Tibetan since the script was invented, 'with auxiliary significance or none (Miller 1956:6),' which 'allow for variety in the writing of one and the same phonetic shape;' these 'just have to be memorized word by word: there is no rule to guide in their usage (8).' The Tibetan script does have largely the same system of vowel indication as the Devanagari.

A sample of written Tibetan follows, with an accompanying transcription and translation (from H. Jensen 384-5):



gzan- gyi- bya- ba- mi- šes- kyan
de- dan- de- yi spyod- pa skyon.

Even if you don't understand your neighbor,
make allowances for him and his peculiarity.

There is no lack of scholarly opinion concerning the question of whether members of the Brahmi family of scripts should be considered alphabetic or syllabic. Agreement alone is lacking on this topic. Masica refers to the scripts used for modern Indic languages as alphabets (145), while Snell & Weightman (1989:5) introduce Hindi Devanagari as a syllabary. Kachru (1987:474) also writing on Hindi, states that the script is 'syllabic in that every consonant symbol represents the consonant plus the inherent vowel /ə/,' but then on the next page the characters of the script are listed under the heading of an alphabet. Klaiman (1987:493), writing on Bengali, describes its script as 'organised according to syllabic rather than segmental units,' and Ray et al. declare that 'It is a syllabary, modified somewhat towards becoming an alphabet' (12). Lambert maintains that all of the Indic scripts set forth in her work are syllabaries. Hudak (764) refers to the Thai script as an alphabet, and Miller (1) calls the Tibetan system of writing 'an alphabetic script on syllabic principles.' Wheatley, writing on the Burmese Brahmi script, declares that the inherent vowel 'sometimes leads to Indic writing systems being incorrectly labeled "syllabic"' (1987:844), but Steever, discussing Tamil's Indic script in the same volume refers to it as a syllabary (1987:734).

Disagreement among scholars of writing in general on the typological classification of Brahmi scripts arises in large measure from their differing definitions of alphabetic and syllabic systems. Gaur stresses that 'in alphabetic scripts... vowels and consonants have equal status' (119) and, since this is clearly not the case for Brahmi scripts, they are classified as syllabic. Gelb (1965) is on the whole unwilling to commit himself. He declares, 'The main characteristic of the alphabet is the existence of special signs for both consonants and vowels' (184), but then observes that in Indic writing systems the vowel indicators are 'attached to the respective syllabic signs' (187). He describes the inherent vowel as an 'abnormal development' (239) and relinquishes the question by calling for 'sharper typological definitions' for future discussions (188).

DeFrancis (1989) draws a sharp distinction between syllabic scripts such as that of Japanese which

> represent syllables by means of unitary syllabic signs, and Indic scripts which are 'syllabic' only in the quite different sense that they represent phonemes by means of non-unitary signs - graphemes representing phonemes - which are grouped together to form a syllabic bundle. Such scripts must still be classified as basically phonemic systems. (193)

DeFrancis equates such phonemic systems with alphabetic writing. Coulmas essentially agrees, arguing that the Indic scripts are 'not syllabic because the other [non-inherent] vowels are indicated by systematically modifying the basic consonant sign with additional diacritical marks' (183). He goes on to observe, 'The unit of writing, the syllable, is not the same as the unit of underlying analysis, the phoneme.' For both

Coulmas and DeFrancis, then, it is this unit on analysis that establishes a script's typological status.

H. Jensen and Diringer both gravitate toward the alphabetic viewpoint. Jensen writes regarding the classification of Brahmi scripts as syllabic:

> There is some justice in this point of view; on the other hand, however, two things must be emphasized, first that there are no syllable-signs for [e.g.] ki, ku, ke, ko, etc., on the contrary, in these cases a vowel sign is added, and the sign concerned thus has to lose its a and and become a pure consonant-sign; and secondly that when several consonants come together... the many ligatures themselves... show that the signs are first and foremost pure consonant-signs and that the inherence of an a represents, not something essential, but a peculiarity. (362-3)

Diringer, too, argues the individual representation of sounds in the absence of an inherent vowel gives the Brahmi scripts an alphabetic classification: 'Syllabic forms of writing... are ultimately based on the fact that the smallest unit into which any spoken word or series of sounds can be subdivided is the syllable' (1962:23). Later, however, he comes to view the inherent vowel as a flaw in the writing system and therefore calls the Devanagari script a 'semi-syllabary.' (1968:283)

Both alphabetic and syllabic arguments regarding the typological classification of Brahmi scripts unquestionably have merit. With the exception of post-consonantal /ə/, every phoneme receives an explicit segmental representation and, as the scripts were originally conceived at least, /ə/ could invariably be considered as present in the absence of any other mark. Still, it should be borne in mind that the existence of this inherent vowel is not some sort of aberration, but has been a part of these scripts from their origin. In the modern Indian languages, the scripts could be construed as moving in a more alphabetic direction, since in certain environments, even an unmarked consonantal character stands for itself alone. On the other hand, before the reader can analyze the script into its individual phonemic, or, in the case of Sanskrit, phonetic segments, words must first be broken down into the syllable-based units of which they are composed. In contrast, in an unambiguously alphabetic script words are constructed directly from their member segments, and these segments always appear in the same linear order relative to pronunciation. In Brahmi scripts, within syllabic units, although every individual segment may be in evidence, the reader must have at least some ability to arrange these items into the proper order of pronunciation, as the signs अर्थिन themselves may appear in virtually any order within their syllabic bundles. In the Sanskrit word [art^{h}in] 'wanting, petitioning,' the sequence r-t^{h}-i appears in reverse order relative to the left-to-right direction of the script. The assessments of Coulson and Diringer that the Devanagari script is neither wholly alphabetic nor wholly syllabic may therefore be said to possess considerable insight, for neither classification does the writing script complete justice.

The Korean Hangul writing system has been widely praised for the logic and straightforwardness with which it was devised. Gale (1912:14), for example, writes, 'In simplicity, the Korean [script] has perhaps no equal, easy to learn and comprehensive in its power of expression.' Although it has forty signs corresponding to individual sounds, many of these are formed by regular principles from the more basic signs. The basic consonantal signs are: ㄱ /k/, ㄴ /n/, ㄷ /t/, ㄹ /l/ ([r] initially), ㅁ /m/, ㅂ /p/, ㅅ /s/, ㅇ /ŋ/ (0 initially), ㅈ /c/, ㅎ /h/. Aspirated plosives are indicated by adding a stroke to the symbols for the unaspirated ones: ㅋ /k^{h}/, ㅌ /t^{h}/, ㅍ /p^{h}/, ㅊ /c^{h}/. Laryngealized ('double') consonants are indicated by doubling the signs for their non-laryngealized counterparts: ㄲ /k'/, ㄸ /t'/, ㅃ /p'/, ㅆ /s'/, ㅉ /c/.

In like manner, there are eight basic vowel signs: ㅣ /i/, ㅡ /ŭ/ ([ɨ]), ㅓ /ə/, ㅏ /a/, ㅜ /u/, ㅗ /o/, ㅔ /e/, ㅐ /æ/. Symbols for two other 'pure vowels' (N. K. Kim 889), /ü/ and /ö/, are formed by adding ㅣ to the signs for their back counterparts and are alternately analyzed as /we/ and /wi/ (Lukoff 1982:xvi). Combinations of six of these vowels with y-glides, considered diphthongs, are formed, again, by one additional stroke: ㅕ /yə/, ㅑ /ya/, ㅠ /yu/, ㅛ /yo/, ㅖ /ye/, ㅒ /yæ/. Combinations with w-glides are analyzed as diphthongs with either /u/: ㅞ /we/, ㅝ /wə/; or with /o/: ㅘ /wa/, ㅙ /wæ/. One other diphthong combines /i/ and /ŭ/: ㅢ /ŭi/.

These individual signs are grouped together to form syllable-based blocks, again according to regular principles. The vowel-sign always occupies the central position, thus becoming the 'nucleus' for the syllabic group. Then, depending on whether the vowel-sign is vertical or horizontal, the syllable-initial consonant is indicated either above or to the left of it: 누 /nu/, 자 /ca/. This initial position is never left empty; if there is no syllabic onset, a silent ㅇ appears in the initial position: 이 /i/, 요 /yo/. The final position may be left empty; when it is filled, it always appears at the bottom of the block, beneath the other two signs: 정 /cəŋ/, 돌 /tol/, 원 /wən/. These syllabic blocks have customarily been written vertically, although they sometimes are arranged horizontally to accommodate printing.

A sample of written Korean follows, accompanied by a transcription and translation (adapted from Katzner 220):

진달래꽃

나 보기가 역겨읶
가실 때에는
말없이 고히 보내드리우리다.

영변에 약산
진달래꽃
아름따다 가실길에 뿌리우리다。

가시는 걸음 걸음
놓인 그 꽃을
사뿐히 즈려밟고 가시옵소서。

나보기가 역겨읶
가실 때에는
죽어도 아니 눈물 흘리우리다。

cin- tal- ræ- k'och

na po- ki- ka yək- kyə- ik'
ka- sil t'æ- e- nŭn

mal- əps- i ko- hi po- næ tŭ- ri u- ri- ta.

yəŋ- pyən e yak- san
cin- tal- ræ- koc^h
a- rŭm- t'a- ta ka- sil kil- e p'u- ri- u-
ri- ta.

ka- si- nun kəl- ŭm- kəl- ŭm
nuh- in kŭ k'oc^h- ŭl
sa- p'un- hi- cu- ryə palp- ko ka- si- op-
so- sə.

na po- ki- ka yək- kyə- ik'
ka- sil t'æ- e- nun
cuk- ə- to a- ni nun- mol hul- ri- u- ri-
ta.

The Azalea

When you take your leave,
Tired of seeing me,
Gently and silently I'll bid you go.

From Mount Yag of Yongbyon
An armful of azaleas I shall pick,
And strew them in your path.

Go now, I pray, with short steps!
Let each footstep gently tread
The flowers which I have strewn for you.

When you take your leave,
Tired of seeing me,
Though I should die, I shall not weep.

The pronunciation of the individual signs is not unvarying. For example, the alternation of /l/ with [r] has been noted, unaspirated stops are voiced word-medially, and in a syllable-final position ㅅ /s/ is pronounced [t] and the laryngealization contrast is neutralized. All of these alternations, however, are completely predictable in any given environment, a fact which has by no means been lost on those analyzing the Hangul script. Taylor (1980:68), discussing the script's alphabetic aspects, comments, 'In Hangul the ideal of one symbol for one phoneme is almost realized.' Coulmas writes, 'Of all the systems that were actually invented as writing systems, the Korean script comes closest to treating distinctive features as the basic units of representation' (120). DeFrancis goes even further, declaring, 'Korean as written today is more accurately designated as morphophonemic. That is to say, changes in pronunciation are generally not indicated in the spelling if they can be predicted from the environment' (193). In Hangul, every spoken segment is accounted for in the script, and the phonetic value of any given sign can be ascertained from its environment. Such characteristics would not only tend to indicate that the Hangul script is an alphabet, but a very good one at that.

Taylor, however, stresses the syllabic aspects of the script as well,[5] finding certain advantages to the fact that the primary visual object is a syllable rather than a phoneme:

> Sequencing and grouping sounds can be stages in word identification. Problems associated with these stages can be minimized in a syllabary where the syllabic breaks within a word are immediately apparent and a word requires only a short array of letters... Another advantage of a syllabary is that a syllable is a stable and concrete unit to compare with a phoneme. Often a consonant phoneme by itself cannot be pronounced or described until it is paired with vowels to form a syllable. Not surprisingly, a syllabary is easier to develop and to learn than an alphabet. Young children find it easier to segment words into syllables than into phonemes.(70)

Coulmas, too, notes the advantages of the script's syllabic arrangement after observing its phonemic accuracy (120), and does not venture to classify it as either alphabetic or syllabic. Among other commentators, Gaur emphasizes the syllabic organization of the Hangul (84-5), although few scripts better meet the criterion of approaching the ideal of one sound per phoneme (119). In DeFrancis' view, Hangul is no more syllabic than he sees the Indic scripts as being (193); he goes so far as to assert, 'Korean can be called syllabic only in the same sense that English can be called logographic because it groups its letters into words' (192). This, however, would seem to overlook Taylor's arguments regarding the different approach to the script necessitated for the reader by this different arrangement. H. Jensen calls Hangul a 'pure alphabetic script' (211), while Diringer describes it as 'practically an alphabet' (1968:352).

One apparent source of disagreement is terminological. To DeFrancis, Lukoff, and N. K. Kim, the component members of the syllabic blocks are letters of an alphabet, while for Taylor the blocks themselves are the letters, and J. P. Kim (1983) seems to use the term interchangeably. Kim does also use the term 'syllabigraph' to refer to these units; he credits typographic designer Ann Sang-oo for coining this word, 'for lack of an existing one to express the way Korean units are constructed... Hangul combines the features of an alphabet and syllabary' (22).

A factor which may impel scholars to typologize such a script as an alphabet is that such prominent theorists of the subject as Gelb (201) and H. Jensen (52-3) explicitly regard alphabetic scripts as more evolved and therefore more advanced. To acknowledge the syllable-based aspects of a script might therefore seem to diminish its prestige by implying that it is somehow more 'primitive.' In this connection, it is worth noting, with Gaur, that some scripts do not shed their syllabic characteristics to evolve into full-fledged alphabets simply 'because syllabic scripts are an excellent vehicle for the representation of a large number of languages' (119). It also remains true that the Korean script is a work of genius by whatever name one chooses to refer to it. DeFrancis aptly describes King Sejong, the script's reputed inventor who ruled during the fifteenth century, as 'a monarch who, if rulers were ever measured by anything besides military exploits, would surely rank among the foremost of those who have appeared on the stage of history' (188). In any event, while the Hangul writing system's phonemic representation is nothing short of remarkable, its syllabic orientation, as is true of the Brahmi scripts, is significant enough that it cannot be ignored.

Neither Hangul nor the Brahmi family of scripts may be classified as either alphabetic or syllabic with complete accuracy. One might therefore pause to consider where they fit relative to one another on a continuum between the two script types. A particularly striking contrast between the two writing systems is the inherent vowel of the Brahmi scripts as opposed to what in Hangul might be considered an 'inherent initial consonant.' No syllabic block may appear with its

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initial position unfilled; if there is no pronounced syllabic onset, ㆁ /ŋ/ is written but remains silent. Gale in fact notes that the script originally also had three other silent initials: ㆆ , ㅇ , ㅿ , but that ㆁ was eventually substituted for them (44). As a result, every written Korean syllable must include an onset of some sort and a vocalic nucleus, although the coda remains optional. In Brahmi scripts such as Devanagari, however, the consonantal character conceived as the most significant element of a syllable may appear in certain circumstances with no following vowel if a virāma is attached.

This indeed is the fundamental difference between the two; in Hangul the vowel which modern theory refers to as the syllabic nucleus occupies the central and most prominent position, while in the Brahmi scripts, it is the consonant immediately preceding this vowel that is considered the basis upon which the rest of the syllable is built. Immediately preceding consonants, conjoined to this segment, are considered part of this syllable, as Lambert (76) explicitly states. Also indicative of this is the fact that, if in Devanagari the vowel [i] is pronounced after a consonant cluster such as [str-], the vowel-sign is written before the entire cluster: स्त्रि. Hangul holds a more "modern" conception of the syllable. It is also more regular and more linear in its organization of the syllable; consonants preceding the vowel are always written above or to the left of it, while those following are always below it. Brahmi vowel diacritics, on the other hand, may appear in any direction from the consonant, and even, in the Thai and Bengali scripts, on two sides of it. It may therefore be concluded, on the whole, that while neither Hangul nor the Brahmi family of scripts is completely alphabetic, Hangul comes much closer to fitting this description.

Nevertheless, the relative typological similarity between the two writing systems, coupled with the recent origin of the Korean script, inevitably raises the question of whether any of the Brahmi scripts might have had some influence on the shaping of Hangul. Of course, by far the greatest outside influence on Korean culture was China, and the Hangul syllabigraphs certainly bear a greater casual resemblance to Chinese characters than to those of any of the Brahmi scripts. DeFrancis affirms, 'What Sejong did was to adapt the Chinese principle of equidimensional syllabic blocks by grouping the letters that comprise a Korean syllable into blocks separated from each other by white space' (191). The fact remains, however, that Hangul is much closer typologically to the Brahmi writing systems than to that of Chinese. H. Jensen reports that before the invention of Hangul Koreans had obtained some utility from various Chinese methods of rendering unfamiliar sounds by adapting existing characters to syllabic usage and assumes that the Koreans thereby became aware of the syllabic principle (179, 211). Gale (1912) argues that one particular set of syllabic characters was in turn inspired by the Devanagari script (42, 48-9). An indirect relationship at least is thus demonstrated.

Moreover, a number of scholars, among them Gaur (85) and Lee (6-7) suggest that the Sanskrit and Tibetan languages as well as the scripts with which they were written would quite likely have been known to literate Koreans, and Lee points to these as likely sources for the alphabetic aspects of Hangul. H. Jensen also mentions a Korean writing system known as the Pumso script, developed before the time of Sejong, which is used 'in Buddhist ceremonies of prayer and sacrifice for the transcription of foreign Sanskrit words' (216). This script was apparently fairly closely modeled on the Tibetan script. DeFrancis, too, names India as a likely, if perhaps indirect, source of alphabetic principles (186). Indeed, unless we are to believe that Sejong and his assistants conceived of representing a single sound with each sign entirely on their own, it is most difficult to imagine from what other source they might have learned of this principle.

Finally, one other question remains from the anomalous typological status of these two writing systems, one of which represents a very significant portion of the world's languages and population, while the other, although isolated, nevertheless presents linguists with an impressive specimen of phonemic analysis. The failure of most commonly accepted definitions for syllabic and alphabetic systems of writing to include such important scripts and script families would seem to suggest that a new typological category is needed to fill this void. Suggestions such as 'alphabetic syllabary,' 'alphabet on syllabic principle,' or 'semi-syllabary' might not be the worst compromise, for the time being at least, as they take into account the elements found in these writing systems. Despite the differences that do exist between Hangul and the Brahmi scripts, they clearly belong together in such a category.

NOTES

1. Although there is no definitive evidence the majority of scholarly opinion is reasonably confident that the Brahmi script was derived from or at least inspired by a West Semitic source; see especially Shapiro 1969, Masica 1991:133-4, H. Jensen 1970: 368-70, and Diringer 1962:144-5. In rather greater doubt is its precise date of origin. Diringer places it in the seventh century B.C., While H. Jensen (363) asserts that 'literary evidence shows it to have been in widespread general use in the fifth century B.C.' Masica, on the other hand, argues strongly that the script was still quite young in the time of Asoka, after whom the inscriptions bearing the first clear example of the Brahmi script are customarily named.

2. For a comprehensive inventory of Brahmi scripts, see H. Jensen 361-404, or Diringer 1968:257-351.

3. The vowel characters based on that of [a] are variously written either as represented or as अ , आ , ओ , औ . Lambert identifies those found in the text with Bombay printing houses and the Marathi language, preferring the latter for Sanskrit and Hindi (21, 102). In practice, however, associations are less rigid; Coulson as well as Snell & Whitman (1989) use the Bombay characters for their respective textbooks on Sanskrit and Hindi, and Katzner's (1977) sample of Hindi includes the Bombay characters, while the Marathi sample includes the other set. The Bombay characters will be used in this discussion as they seem both more esthetically pleasing and easier to produce.

4. One noteworthy development mentioned by Masica 150 and Lambert 103 is an effort in Marathi to regularize initial vowel signs so that they consist of the basic अ plus the post-consonantal allographs: अि [i], अी [ī], अु [u], अू [ū], अृ [ṛ], अे [e], अै [ai]. However, this has not gained widespread currency and is certainly not in evidence in the following sample, necessarily brief and tentatively transcribed due to the poor quality of the printed original, adapted from Katzner 189:

मला उगीच अंधुक अंधुक अशा गोष्टी आठवतात.

Malā̆ ugīc ā̃dhuk ā̃dhuk aśā̆ goṣṭī āṭhvatāt.

I have a sort of hazy recollection of certain events.

5. The subject of Hangul's logographic aspects is briefly entertained in Taylor's article as well (73). This is based largely on the fact that some Korean words are monosyllabic, so that one syllabic block stands for one word, such as 닭 /talk/ 'hen.' This, however, might more appropriately be ascribed to the script's syllabic aspects.

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THE CASE OF SUBJECTS IN THE ROMANCE CAUSATIVE*

Sara Thomas Rosen

Abstract:

This paper addresses the problem of the realization of the subject embedded under the Romance causative verb. There is ample evidence that the subject appears inside the embedded VP complement of the causative, and is Case-marked by the embedded verb. It is suggested that the embedded verb is endowed with an extra Case-marking ability, transmitted from the causative verb. This account explains the distinct patterns of Case-marking that appear on the embedded subject for transitive, unergative, and lexical dative verbs, in both the faire-infinitive and faire par constructions.

1. Introduction

One characteristic of the Romance causative verbs is that the subject of the embedded verb appears to the right of the embedded verb and its object (if it has one). This word-order fact is illustrated in (1) - (3) for French, Spanish, and Italian. In addition to the causative verb 'make', this construction may occur with the verb 'let' and the perception verbs 'see', 'hear', 'watch', etc.

(1) French
   a. Jean a fait manger les pommes à Marie.
      'Jean made Marie eat the apples.'

   b. Jean a fait aller Marie.
      'Jean made Marie go.'

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(2) Spanish
a. María hizo arreglar el coche a Juan.
'Maria made Juan repair the car.'

b. María hizo trabajar a Juan.[1]
'Maria made Juan work.'

(3) Italian
a. Maria ha fatto riparare la macchina a Giovanni.
'Maria made Giovanni repair the car.'

b. Maria fa lavorare Giovanni.
'Maria makes Giovanni work.'

A second distinguishing property of the Romance causative construction is the Case that appears on the subject embedded under the causative verb. It is always either accusative or dative, depending on the transitivity of the embedded verb. This can be seen most clearly when the subject is pronominal because clitic pronouns distinguish accusative from dative, as illustrated in (4) - (6). If the embedded verb has an accusative Case-marked object, the embedded subject appears in dative Case. If, however, the embedded verb has no accusative Case-marked object, then the embedded subject appears in accusative Case.

(4) French
a. Jean lui a fait manger ce gâteau.
'Jean him-dat made eat the cake.'

b. Jean l'a fait aller.
'Jean her-acc made go.'

(5) Spanish
a. María le hizo arreglar el coche.
'Maria him-dat made fix the car.'

b. María lo hizo trabajar.
'Maria him-acc made work.'

(6) Italian

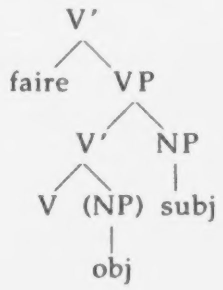
a. Maria gli ha fatto riparare la macchina.
'Maria him-dat made fix the car.'

b. Maria lo fa lavorare.
'Maria him-acc makes work.'

The purpose of this paper is to show that an explanation for these facts need not assume either rules of VP preposing, or the preposing of any projection of V (as in Baker, 1988a; Burzio, 1986; Kayne, 1975; and Rouveret & Vergnaud, 1980). It also need not assume rules involving the internalization of an external argument (Di Sciullo & Williams, 1987; Zubizarreta, 1985; 1987), or the assumption that the embedded subject is an argument of the matrix verb (Bordelois, 1988). The causative facts can be explained straightforwardly within the recent hypothesis that subjects are base-generated within the maximal projection of V (cf. Fukui & Speas, 1986; Kitagawa, 1986; Koopman & Sportiche, 1988; Kratzer, 1988; Kuroda, 1988; Sportiche, 1988 to name a few) plus the assumption that the V^{max}-internal subject position is to the right of the V' in Romance (Bonet, 1989).[2]

I will argue that the Romance causative, the so-called faire infinitive construction, has the phrase structure representation given in (7); that is, the causative verb takes a VP complement rather than a full CP or even TP complement.[3] This fact, along with the subject under VP hypothesis, will explain the position and Case-marking of the embedded subject.[4]

(7)



2. Evidence for VP Complement of Causatives

It is not new to posit that the Romance causative takes a VP complement. This notion has been proposed in various forms in the works of Burzio (1986), Di Sciullo & Williams (1987), Kayne (1989), Marantz (1985), Rosen (1989), and Zubizarreta (1985; 1987), for example. Several pieces of evidence, both old and new, suggest that the complement to the causative is correctly identified as a VP. They include the lack of inflectional material in the clausal complement of the causative verb, facts concerning clitic climbing, and a distinction in the ability to take VP-external subjects.

2.1 Lack of Clausal Negation on the Embedded Verb. One source of evidence that the complement of the Romance causative is a VP rather than a full clausal complement is to show that the material that ordinarily goes in the functional projections dominating VP cannot exist in the complement to a causative. Finding a test is difficult, given that much of the inflectional material is absent in any infinitival complement, given that they have no independent tense and generally do not allow modals. A comparison of (8a) with the tensed complement (8b) in English illustrates this point. However, clausal negation can appear in an infinitival complement, as the grammaticality of (8c) indicates.

(8) a. *We believe John must/can to be intelligent.
b. We believe (that) John must/can be intelligent.
c. We believe John not to be intelligent.

It is generally assumed that clausal negation forms a maximal projection falling within the functional inflectional categories (cf. Pollock, 1989, and subsequent work on clausal functional categories). Thus, clausal negation provides a test case for the VP nature of the complement to the Romance causative. The VP analysis of the complement to the Romance causative constructions leads to the prediction that negation will not appear in the the embedded clause. Indeed, this is the case, as the examples in (9) - (11) show.

(9) French
a. *J'ai fait ne pas partir Jean.
'I made Jean not leave.'

b. *J'ai fait ne pas téléphoner Jean à Marie.
'I made Jean not call up Marie.'

(10) Spanish
  a. *El lo hizo no venir.
    'He made him not come.'

  b. *Paolo hizo no arreglar el coche a Juan.
    'Paolo made Juan not fix the car.'

(11) Italian
  a. *Maria fara non lavorare Giovanni.
    'Maria will make Giovanni not work.'

  b. *Maria fara non leggere questo libro a Giovanni.
    'Maria will make Giovanni not read this book.'

However, under certain circumstances, negation on the embedded phrase is allowed. For example, speakers will marginally accept the examples in (10) if no, the negative element is stressed. And in recent work, Reed (1990b) argues that negation can appear on the clause embedded under the French causative, as in (12a), from Reed (1990b). However, my informants claim that these are quite marginal, and that it is not clear that they have the semantics of clausal negation. In particular, wherever negation can appear embedded under the causative, a VP adverbial can be substituted for the negation (12b).

(12) a. (Par ses incantations,) le sorcier l'a fait ne pas se sentir bien pendant des jours.
    '(Through his incantations,) the sorcerer made him not feel well for days.'
  b. Le sorcier l'a fait totalement se sentir bien pendant des jours.
    'The sorcerer made him totally feel well for days.'

In addition, as Rochette (1988; p.c.) has pointed out, double negation is possible in infinitival TP or CP complements, the first being clausal negation appearing within the functional categories as usual, and the second being VP modification. All these facts taken together, it seems likely that the negation in the clause embedded under the causative is equivalent to the second of these, i.e. a VP adjoined adverbial modifier. Thus, we can maintain the generalization that clausal negation is impossible under the causative. This follows from the analysis of the causatives as taking a bare VP complement. Since clausal negation forms a functional projection outside of VP, it will never appear in the complement to the Romance causative.

2.2 Clitic Climbing. Another phenomenon related to the Romance causative construction is clitic climbing. In this construction, an object clitic appears on the matrix verb rather than on the embedded verb which selects it, as illustrated in (13) - (15). Further, as the French examples in (16) illustrate, clitic climbing is impossible out of full CP or TP complements.

(13) French
    a. Jean les$_i$ a fait réciter t$_i$ à Pierre.
    b. *Jean a fait les$_i$ réciter t$_i$ à Pierre.
    'Jean made Pierre recite them.'

(14) Spanish
    a. María lo$_i$ hizo arreglar t$_i$ a Juan.
    b. ?*María hizo arreglarlo$_i$ t$_i$ a Juan.
    'Maria made Juan fix it.'

(15) Italian (Burzio, 1986: 238)
    a. Maria la$_i$ fa riparare t$_i$ a Giovanni.
    b. ??Maria fa ripararla$_i$ t$_i$ a Giovanni.
    'Maria makes Giovanni repair it.'

(16) French
    a. *Jean les croit que Pierre a récité.
    'Jean believed that Pierre recited them.'

    b. *Jean les veut voir.^{5}
    'Jean wants to see them.'

Since clitic climbing is limited to this and similar constructions, it appears that a clitic may only climb out of a VP complement. Assuming, following Kayne (1989), that clitics appear on one of the inflectional heads (Tense, for example), the clitic will be forced to climb out of a VP complement into the inflectional material. That is, if the embedded clause has no inflectional material, then the clitic must appear in the matrix clause. Thus, clitic climbing out of the complement of a causative follows from the assumption that the causative takes a VP complement.

2.3 Stage Level and Individual Level Predicates. Finally, Kratzer (1988) and Diesing (1988) argue that a semantic classification of predicates first pointed out in Carlson (1977) has specific syntactic ramifications for the base position of subjects. The semantic classification distinguishes predicates as either stage level or individual level. A stage level predicate denotes either an action or a temporary property of the subject, whereas an individual level predicate denotes a relatively permanent property of the subject. Kratzer argues that the subject of a stage level predicate is base generated inside the VP, and subsequently may move out of the VP. In contrast, the subject of an individual level predicate must be outside the VP at all levels of the derivation. If the Romance causatives take a VP complement, then this leads to the prediction that they will be compatible only with stage level predicates; if it is true that there are no functional projections dominating the complement to the causative, then there will be no place to project the subject of an individual level predicate. Indeed, the Romance causatives can take stage level predicates as their complements, as the examples in (17) - (19) indicate. But the individual level predicates in (20) - (22) are unacceptable under the causative verbs.[6]

Stage level predicates
(17) French
a. Jean a fait essayer la cuisine française à Marie.
'Jean made Marie try French cooking.'

b. Jean a fait apprendre le français à Marie.
'Jean made Marie learn French.'

(18) Spanish
a. Hice comer la comida Mexicana a Juan.
'I made Juan eat Mexican cooking.'

b. Hice hablar Frances a Juan.
'I made Juan speak French.'

(19) Italian
a. Giovanni ha fatto mangiare una torta a Maria.
'Giovanni made Maria eat Italian cooking.'

b. Giovanni ha fatto apprendere l'italiano a Maria.
'Giovanni made Maria learn Italian.

Individual level predicates

(20) French

a. ??Jean a fait aimer la cuisine française à Marie.[7]
'Jean made Marie like French cooking.'

b. *Jean a fait connaître le français à Marie.
'Jean made Marie know French.'

(21) Spanish

a. *Hice gustar la comida Mexicana a Juan.
'I made Juan like Mexican cooking.'

b. *Hice saber Frances a Juan.
'I made Juan know French.'

(22) Italian

a. *Giovanni ha fatto amare la musica a Maria.
'Giovanni made Maria like Italian cooking.'

b. *Giovanni ha fatto sapere l'italiano a Maria.
'Giovanni made Maria know Italian.'

In addition, one can show that (20) - (22) are not judged ungrammatical solely because of the pragmatics -- that it seems difficult to make someone like or know something. The Spanish examples in (23) indicate that the same meaning can be conveyed with a causative verb and an individual level predicate in the subordinate clause, but only when the complement is in the form of a full tensed CP. The sentences in (23) are syntactically well-formed, because the subordinate clause is a tensed CP with an overt complementizer. In the full CP clause, there is a position in the specifier of one of the inflectional projections (outside the VP) for the subject to be generated. (The contrast in the English examples in footnote 6 provides more evidence against a pragmatic explanation. With the causative verb 'make' it is perfectly grammatical to embed an individual level predicate, but the same individual level predicate is bad under the causative use of 'have'.) Thus, an individual level predicate can only be projected within a full CP or TP clausal complement, and never within a VP complement. Notice that in the examples in (23), the embedded subject appears to the left of the embedded verb. I take this to be the Spec of TP position, as diagrammed in (23c).

(23) a. Hice que a Juan le gustara la comida Mexicana.
'I made that Juan likes Mexican cooking.'

b. Hice que Juan supiera Frances.
'I made that Juan knows French.'

c. Hice [$_{CP}$ que [$_{TP}$ Juan ... [$_{VP}$ supiera Frances]]]

This suggests that in general any CP or TP complement will be compatible with an individual level predicate. Compare the French faire construction in (20) with (24), in which, once again, similar semantic information is conveyed using the verb forcer, which clearly takes a full CP complement.

(24) a. Jean a forcé Marie à aimer la cuisine française.
'Jean forced Marie to like French cooking.'

b. Jean a forcé Marie à connaître le français.
'Jean forced Marie to know French.'

2.4 TP Complement Verbs and the Stage Level/Individual Level Distinction. The verb 'to let' and the perception verbs in Romance may enter into one of two constructions. One is the causative construction, which I will call the VP complement construction. In the other, the verb takes a full TP complement. The contrast between these two constructions is exemplified in the sentences in (25) and (26) for the perception verbs, and in (27a,b) for French laisser ('let'). The most obvious distinguishing characteristic is the position of the embedded subject argument. In the VP complement construction, the subject appears to the right of the embedded verb and its object. In contrast, the subject in the TP complement construction appears between the two verbs.

(25) VP complement construction:
  a. French
     Jean a vu manger les pommes à Marie.
     'Jean saw Marie eat the apples.'

  b. Spanish
     Vi arreglar un auto a Pedro.
     'I saw Pedro fix a car.'

  c. Italian
     Ho sentito cantare una canzone (da Paolo).
     'I have heard Paolo sing a song.'

(26) TP complement construction:
  a. French
     Jean a vu Marie manger les pommes.
     'Jean saw Marie eat the apples.'

  b. Spanish
     Vi a Pedro arreglar un auto.
     'I saw Pedro fix a car.'

  c. Italian
     Ho sentito Paolo cantare una canzone.
     'I have heard Paolo sing a song.'

(27) French
  a. Jean a laissé réparer la voiture à Marie.
  b. Jean a laissé Marie réparer la voiture.
     'Jean let Marie repair the car.'

There are various pieces of evidence indicating that the embedded clause in examples such as (26) and (27b) must contain at least one inflectional projection. In these cases, material that generally appears within the inflectional categories can appear in the complement, providing evidence that the complement in these sentences is not a bare VP. First, the position of the embedded subject between the two verbs is indication that this is not to be treated as the same as the VP complement construction.

Second, clitic climbing out of the embedded object position is impossible in this construction, as the examples in (28) - (30) show.

Assuming that clitics move to the closest governing T position, the clitics in (28) - (30) must be in the embedded T.

(28) French
    a. Jean a vu Marie les manger.
    b. *Jean les a vu Marie manger.'
        'Jean saw Marie eat them.'

(29) Spanish
    a. Vi a Pedro arreglarla.
    b. *La vi a Pedro arreglar.
        'I saw Pedro fix it.'

(30) Italian
    a. Ho sentito Paolo cantarla.
    b. *L'ho sentito Paolo cantare.
        'I have heard Paolo sing it.'

Third, Guasti (1989) has provided evidence for the existence of inflectional functional categories under the perception verbs, using the analysis of V-to-Agr-to-T raising of Pollock (1989), and the relative position of the embedded verb with respect to that of adverbials and negation. The structure of the inflectional system that Pollock proposes is given in (31). Under his analysis, T(ense) takes NegP as its complement; Neg takes AgrP; and Agr takes VP. When there is no negation, T directly takes AgrP as its complement. Each phrase, of course, has its own Spec position, which, for the sake of simplicity, is not included in the diagram here.

(31) $[_{TP}\ \mathrm{T}\ [_{NegP}\ \mathrm{Neg}\ [_{AgrP}\ \mathrm{Agr}\ [_{VP}\ \mathrm{V}\ ]]]]$

Pollock argues that in Romance the verb raises up to Agr and subsequently to T in order to receive its inflectional features. One can determine the position of the verb by the relative order of the verb and negation, and also the order of the verb and VP adjoined adverbials.

Assuming Pollock's structure for the inflectional categories, Guasti shows that the verb embedded under a perception verb undergoes V raising just like any verb in the language. In (32a), (33a) and (34a), the verb raises up around a VP adjoined adverbial at least as far as Agr. Notice that in Italian and Spanish ((32b) and (33b)), verb raising is obligatory, though it may be optional in French (34b). All the sentences in (32) - (34) are from Guasti (1989: 3). The interpretation of these sentences is often odd, but the judgements concerning the relative positions of the adverbs (contrasts of the a and b sentences) are clear.

(32) Italian
a. Ho sentito i bambini piangere spesso.
b. *Ho sentito i bambini spesso piangere.
'I have heard the kids cry often/often cry.'

(33) Spanish
a. He oído a los niños llorar a menudo.
b. *He oído a los niños a menudo llorar.
'I have heard the kids cry often/often cry.'

(34) French
a. J'ai entendu les enfants pleurer souvent.
b. ?J'ai entendu les enfants souvent pleurer.
'I have heard the kids cry often/often cry.'

Guasti further shows that in Italian and Spanish, the verb embedded under the perception verb must appear before the negative element (più or mas 'more' in (35) - (36)). In French, the verb remains after negation, which is precisely what one would predict given Pollock's analysis of V raising in French. The French infinitival only raises as far as Agr, and not to T, unlike raising in Italian and Spanish infinitives which go all the way up to T. The data, again from Guasti (1989: 3-4), are given in (35) - (37).

(35) Italian
a. Ho sentito i bambini non piangere più.
b. *Ho sentito i bambini non più piangere.
'I have heard the kids no cry more/no more cry.'

(36) Spanish
a. He oído a los niños no llorar mas.
b. *He oído a los niños no mas llorar.
'I have heard the kids no cry more/no more cry.'

(37) French
a. *J'ai endendu les enfants ne pleurer plus.
b. J'ai endendu les enfants ne plus pleurer.
'I have heard the kids no cry more/no more cry.'

Examples such as those in (32) - (37) indicate that the complement to the perception verbs can be realized as a TP. If there were just a VP complement, no V raising could take place around an adverbial in the embedded clause, and there would be no place for the embedded negation. I propose, then, that the perception verbs and the verb laisser may take a TP complement. If the embedded subject of a stage level predicate is base-generated under the VP, it will move up to the Spec of TP position, just as in any full clausal construction. And, as will be shown below in Section 4, it will receive Case directly from the matrix verb, by exceptional Case marking.

This leads to the prediction that the perception verbs and laisser should also be able to take individual level predicates. Recall that the subject of an individual level predicate is base-generated outside the VP. In the VP complement construction of the causatives, the embedded complement could not be an individual level predicate. Given the current analysis, one would expect that individual level predicates would be incompatible with the VP complement construction of laisser and the perception verbs, but that the TP complement construction would accept individual level predicates. When informants were asked, the predicted pattern of grammaticality judgements resulted. Data on French laisser appear in (38) and (39). The TP complement construction is exemplified in (38a) and (39a), and the VP complement construction in (38b) and (39b), as one can tell from the position of the embedded subject. The individual level predicate embedded under laisser is consistently better in the TP construction than in the VP construction.

(38) a. Jean a laissé Marie aimer la cuisine française.
b. ??Jean a laissé aimer la cuisine française à Marie.
'Jean let Marie like French cooking.'

(39) a. ?Jean a laissé Marie connaître le français.
b. *?Jean a laissé connaître le français à Marie.
'Jean let Marie know French.'

Similar data are obtained in Spanish for the perception verbs. Again, the TP complement construction is exemplified in (40a) and (41a), and the VP complement construction in (40b) and (41b). In each case, the individual level predicate is significantly better in the TP construction than in the VP construction.

(40) a. ??Vi a Juan gustar la comida Mexicana.
b. *Vi gustar la comida Mexicana a Juan.
'I saw Juan like Mexican cooking.'

(41) a. Oí a María saber Frances.
b. *Oí saber Frances a María.
'I heard Maria know French.'

Thus, I conclude that laisser and the perception verbs can optionally take a full TP complement, and that the embedded subject appears in the Spec of TP at S-structure, and indeed originates there if the embedded clause denotes an individual level predicate. And, as will be argued below in Section 4, the embedded subject is then Case-marked by the matrix verb in an ECM construction:

(42) Marie a laissé [$_{TP}$ Pierre$_i$ [T]... [$_{VP}$ réciter les poèmes [t$_i$]]].
Acc

3. Case-marking and the Position of the Embedded Subject

The conclusion drawn from the previous section is that the Romance causative verb, faire/fare/hacer, takes a VP complement, with the subject of the embedded verb resting in its base position within the VP. Laisser and the perception verbs sometimes take a VP and sometimes take a TP complement. This section will establish that in the VP complement construction, the embedded subject is directly Case-marked by the embedded verb, but that the Case assigned to the subject is transmitted from the matrix causative verb. By contrast, in the TP complement construction, the matrix verb directly Case-marks the embedded subject in its Spec of TP position (ECM). I will presently sketch out exactly how the Case-marking applies.

First, the Romance causative verb is an accusative Case assigner. This is supported by the fact that the causative verb can take an accusative Case-marked NP complement:

(43) French
- a. Jean a fait un bateau.
  'Jean made a boat.'
- b. Jean a fait une fête.
  'Jean gave a party.'

(44) Spanish
- a. Juan hizo un pastel.
  'Juan made a cake.'
- b. Hice una llamada.
  'I made a telephone call.'

(45) Italian
- a. Gianni ha fatto una telefonata a Maria.
  'Gianni made a telephone call to Maria.'
- b. Gianni ha fatto una corsa.
  'Gianni made a run.'

An additional piece of evidence that these verbs have an accusative Case to assign comes from similar verbs that optionally enter into the causative construction. These verbs were introduced in section 2.4, where evidence was presented indicating that laisser and the perception verbs are exceptional Case markers (ECM); thus they must be Case-markers. In sentences like (46) - (48), the perception verb takes a TP complement. In such sentences, the embedded subject receives accusative Case directly from the matrix verb in its S-structure position in the Spec of TP (cf. also Guasti (1989) for a similar proposal). Cliticization of the embedded subject out of the Spec of TP subject position shows that it always receives accusative Case.[8] In these examples, the embedded object is cliticized to the embedded verb simply to ensure that we have the TP complement construction (recall that climbing of the object clitic is impossible out of an embedded TP). The existence of the ECM construction further indicates that these verbs are accusative Case assigners.[9]

(46) French
- a. Jean a vu Pierre la réparer.
  'Jean saw Pierre fix it.'
- b. Jean l'a vu la réparer.
  'Jean saw him-acc fix it.'
- c. *Jean lui a vu la réparer.
  'Jean saw him-dat fix it.'

(47) Spanish
a. Juan vio a Pedro arreglarlo.
'Juan saw Pedro fix it.'
b. Juan lo vio arreglarlo.
'Juan saw him-acc fix it.'
c. ?Juan le vio arreglarlo.[10]
'Juan saw him-dat fix it.'

(48) Italian
a. Ho visto Gianni ripararlo.
'I saw Gianni fix it.'
b. L'ho visto ripararlo.
'I saw him-acc fix it.'
c. *Gli ho visto ripararlo.
'I saw him-dat fix it.'

The perception verbs also enter into the VP complement construction, just like the causative verbs (cf. the examples in (25) above). In addition, the Case-marking patterns in the VP complement construction of the perception verbs are identical to that of the causative verbs. Thus, I conclude that the causative and perception verbs are alike in being accusative Case assigners.

Returning to Case assignment in the causative construction, let us assume that accusative Case is assigned under adjacency, as suggested in Stowell (1981). In addition, it appears that the verb in Romance assigns its Case rightward. The adjacency requirement on Case assignment and directionality of Case assignment taken together mean that the causative verb can only assign its Case to the VP complement, the constituent directly adjacent and to the right of the causative verb. However, a VP neither requires Case, nor is it capable of bearing Case. Since there is no other constituent that is capable of bearing Case, the Case feature is transmitted from the embedded VP to its head, the embedded verb (as suggested, for example, in Rouveret & Vergnaud, 1980). This Case transmission process is illustrated in (49) with the dotted line.

(49) faire $[_{VP} [_{V'}$ réparer NP] NP]
Case

Let us say, further, that Case transmission is only possible to a head that is capable of assigning accusative Case. The result will be that Case transmission cannot apply in either a CP or a TP complement. The head of CP (C) is not a Case assigner at all, and the head of TP (T) is not an accusative Case assigner. Therefore it is only possible to transmit Case to the category V.[11]

The result of Case assignment by the causative verb is that the embedded verb always has one extra Case to assign. Therefore, if the embedded verb has n Cases to assign ordinarily, it will functionally have n + 1 Cases to assign when embedded under the causative.

3.1 Case to the Embedded Subject. There is a generalization across languages in the Case-marking patterns within causative constructions. If a language allows double accusatives in general, then the embedded subject and the embedded object will both receive accusative Case; but if a language does not allow double accusative, then one VP-internal NP will receive accusative Case and the other will receive some other Case, like dative (Aissen, 1979; Baker, 1988a; Rosen, 1989). This generalization strongly suggests that one verb is responsible for assigning Case to all the arguments of the embedded verb, including the subject. As an example of a double object language, Kinyarwanda allows two accusative Case-marked bare NPs within one VP. Thus, for a triadic predicate like 'give', the two internal arguments both behave as if they have structural accusative Case (cf. Kimenyi, 1980; Baker, 1988a). In the causative construction, the embedded object and the embedded subject also appear as bare NPs, and both behave as if they have accusative Case in the same ways that the double object verb does. In the examples (50) from Kimenyi (1980: 31, 164), one can see that the pattern of Case-marking appears to be the same in the double object construction of (50a) and the causative construction of (50b).[12] Baker (1988a) shows that either of the bare NPs in sentences like (50a) and (50b) can become the subject of a passive, a property only of objects that receive accusative Case in active clauses.

(50) a. Umugabo y-a-haa-ye umugóre igitabo.
man he-past-give-asp woman book
'The man gave the woman the book.'

b. Umugabo a-ra-som-eesh-a ábáana ibitabo.
man he-pres-read-cause-asp children book
'The man is making the children read the books.'

Unlike Kinyarwanda, Romance verbs never assign two accusative Cases. If a verb has two structural Cases to assign, they are always accusative and dative, as in (51a) in which the verb is a triadic predicate. And like the simple verbs with two internal arguments, in the causative construction, the Cases to the object and subject are also accusative and dative (51b). Other languages with similar Case patterns include Japanese, Turkish, and Malayalam (cf. Rosen (1989) for further discussion of the Case patterns in simple VPs and in the VPs embedded under the causatives).

(51) a. Jean a donné un livre à Marie.
'Jean gave a book to Marie.'

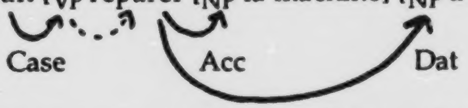
b. Jean a fait lire ce livre à Marie.
'Jean made Marie read this book.'

In the Romance causative construction, the Cases that are assigned within the embedded VP are exactly those structural Cases that a verb in the Romance languages generally assigns -- accusative when the verb is transitive, and accusative and dative when the verb is ditransitive. So, the object and subject arguments of the embedded verb are Case-marked as if they were both object arguments; they are both Case-marked by the verb, even though one argument is clearly a subject (that is, an external argument projected outside the V').

The conclusion one must draw from this discussion is that one verb simultaneously gives Case to both the object and the subject arguments inside the VP. The mechanism I propose for this is Case transmission. The causative verb has a Case to assign, but its VP complement cannot bear Case. Therefore, the Case is transmitted down from the VP to its head V. The V then Case-marks its arguments within its own maximal projection. The embedded subject happens to rest within the VP, and therefore will be Case-marked just like the other complements of the V.

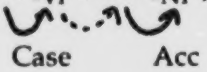
If the VP embedded under the Romance causative has two NPs (the verb's object and its subject), then they will be assigned accusative and dative Case respectively. The Case assigning process is illustrated in (52). A verb like réparer 'repair' has one structural Case of its own to assign. Faire also has a Case to assign, but this Case feature is transferred down to réparer. Réparer will subsequently have two Cases to assign. The analysis assumes that the NP adjacent to the verb will receive accusative Case, and that the adjacency requirement does not hold for dative Case (cf. Stowell, 1981). Since the direct object is generated adjacent to the verb, within V', it receives accusative Case from the verb. This leaves dative Case to be assigned to the subject, which is generated outside the V'.[13]

(52) Transitive:
Marie a fait [$_{\text{VP}}$ réparer [$_{\text{NP}}$ la machine] [$_{\text{NP}}$ à Jean]]

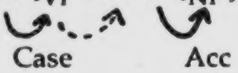


For unergative and unaccusative predicates, the embedded verb has no Case of its own to assign. It acquires one Case from the matrix causative verb, resulting in one Case to assign. The sole argument receives accusative Case, as assigned by faire via the embedded verb. Implicit in this account is the assumption that accusative Case is always assigned first; thus if the verb has only one structural Case to assign, it will always be accusative. The result of the Case-assignment process is that the Case realized on the embedded subject is directly determined by the transitivity of the embedded verb.

(53) a. Unergative:
Marie a fait [$_{\text{VP}}$ laver [$_{\text{NP}}$ Jean]]



b. Unaccusative:
Marie a fait [$_{\text{VP}}$ arriver [$_{\text{NP}}$ Jean]]

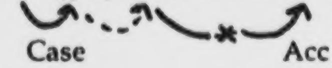


3.2 Lexically-Marked Datives. The VP-internal analysis of subjects in the Romance causative leads to the prediction that the embedded subject will always appear outside all other arguments of the verb. This prediction is borne out in the simple cases. In addition, as shown in Burzio (1986: 241, 243), and as pointed out in Rouveret and Vergnaud (1980), a clause with two datives is not accepted by most speakers. To the extent that they are accepted by speakers (some speakers accept (54) at least marginally, according to Burzio), the outermost dative phrase is unambiguously interpreted as the subject.

(54) Jean fait porter une lettre à Marie à Paul.
'Jean made Paul take a letter to Marie.'

What happens, though, if the base-generated order of arguments is at odds with the adjacency requirements of Case assignment? This occurs in verbs that are lexically marked as taking dative objects (inherent Case). The object is an internal argument, and therefore is base-generated within the V′. The subject is base-generated outside V′; it must receive accusative Case from the verb, but this configuration does not meet the adjacency requirement on accusative Case assignment:

(55) faire $[_{VP}$ $[_{V'}$ V NP-dat] NP]



A concrete example will help at this point. The verb *téléphoner* is lexically marked as taking a dative object, as the sentence in (56a) shows. When embedded under a causative, we actually find that the lexically marked dative phrase appears at S-structure after the accusative subject. The order of the arguments of *téléphoner* in (56b) is opposite of that expected by the base-generation of the internal argument inside V′, and the external argument outside V′ as diagrammed in (56c). How does one get the internal argument of the embedded verb to appear outside its external argument?

(56) a. Jean a téléphoné à Marie.
'Jean telephoned Marie.'

b. Pierre a fait téléphoner Jean à Marie.
'Pierre made Jean telephone Marie.'
*'Pierre made Marie telephone Jean.'

c. Pierre a fait $[_{VP}$ $[_{V'}$ téléphoner à Marie] Jean]

In (56b), the subject of *téléphoner* is *Jean*, and the internal argument is *Marie*. The expected D-structure of for (56b) is given in (56c), with the internal argument projected inside the V′ and the external argument projected outside V′. I suggest that the sentence in (56b) is derived from the D-structure given in (56c) by extraposing the internal argument PP. Jackendoff (1977: 75) describes instances in which argument PPs appear to the right of adverbial phrases (as in 'John gave the beans quickly to Bill'), and suggests that this is derived by a process of PP extraposition. In the VP complements to causatives, PP extraposition will be driven by Case Theory. Assignment of accusative Case requires string adjacency, and therefore the embedded subject must be adjacent to the verb in order to receive accusative Case from it. This will force the PP to move out from between the verb and the subject.

In addition, the present theory predicts that the subject of an intransitive verb under the causative will appear in accusative rather than dative Case. As (56b) shows, this is correct. The verb téléphoner has one inherent Case and no structural Cases to assign. Faire assigns Case to the embedded VP, and when the Case feature is taken over by téléphoner, this verb has one structural Case to assign. The subject will then receive accusative Case.

3.3 Faire par and Case Assignment. One final piece of evidence for the current approach to Case assignment in the causatives comes from the faire par construction. In faire par, what seems to be the embedded subject appears after the preposition 'by' (par in French, por in Spanish, and da in Italian). Unlike the faire infinitive construction, the embedded subject is always either realized in a by phrase, or is completely absent.[14] Some examples of the faire par construction are provided in (57).

(57) a. French
Marie a fait réparer la voiture (par Paul).
'Marie made Paul/someone repair the car.'

b. Spanish
Juan hizo arreglar el coche (por Pedro).
'Juan made Pedro/someone repair the car.'

c. Italian
Giovanni ha fatto riparare la macchina (da Paolo).
'Giovanni made Paolo/someone repair the car.'

Zubizarreta (1985; 1987) has argued that in the faire par construction, the external argument of the embedded verb has been suppressed as in passivization. Because the external argument is suppressed, it cannot appear as an argument, but only as an adjunct. Because it is an adjunct, it is correctly predicted to be optional.

Zubizarreta shows that the by phrase in the faire par construction does not behave like an argument. The evidence she brings to bear on the issue is based on the ability of the logical subject to bind the possessive pronoun sa. The examples in (58) show that by phrases in general cannot bind sa; it must be bound by an argument. In the sentences in (59), one can see that faire infinitive contrasts with faire par in the ability of the embedded 'subject' to be the antecedent for sa. The contrast is fully expected within Zubizarreta's passivization account, because sa maison can only be referentially dependent on Jean if Jean is an argument. The par phrase of (59b) is not an argument, and therefore cannot bind the anaphor sa. However, in (59a) Jean does count as an argument, and therefore may bind sa, as expected. The fact that the by phrase behaves identically in the passive in (58b) and in the faire par in (59b) is good indication that they should be treated as the same phenomenon, and that it is not an argument in either case. These examples are from Zubizarreta (1985: 270, 263).

(58) a. Jean$_i$ a peint sa$_i$ maison.
'Jean painted his house.'
b. *Sa$_i$ maison a été peinte par Jean$_i$.
'His house was painted by Jean.'

(59) a. Elles ont fait peindre sa$_i$ maison à Jean$_i$.
b. *Elles ont fait peindre sa$_i$ maison par Jean$_i$.
'They made Jean paint his house.'

Given the evidence that the by phrase is not an argument, one can assume that the faire par construction is derived by a process of suppression, much like passivization, applying to the embedded verb. In traditional GB accounts, suppression of an external argument applies in the argument structure component, and takes away the accusative Case assigning abilities of the verb (Burzio, 1986); this forces the object to move to subject position in the syntactic component in order to obtain Case from T.[15]

Returning to faire par, suppose that the external argument of the embedded verb is suppressed, effectively taking away its Case. This means that with respect to Case assignment, the embedded verb will act like an intransitive verb. Except in this instance, it has an object argument. When faire assigns Case to its complement VP, and the Case feature percolates down to the head V, the embedded verb obtains one structural Case. This Case is assigned to the embedded verb's object. Thus, the verb whose external argument was suppressed has no Case of its own to assign, but it can transmit the Case of the matrix causative verb. Further, because the external argument of the embedded verb is suppressed, there is no subject inside the embedded VP. The logical 'subject' may only appear as an adjunct by phrase. Because the embedded verb obtains an extra Case to assign from the causative verb, the object of the embedded verb is expected to receive accusative Case even though the embedded verb has no Case of its own to assign. Further, there is no subject argument requiring Case. The expected Case pattern, then, is an accusative marked object, and an optional adjunct by phrase, as diagrammed in (60). This is exactly the Case-marking pattern found in the faire par construction.

(60) Marie a fait [$_{VP}$ réparer [$_{NP}$ la machine [par Paul]]
Case Acc

4. Case Marking in the TP Complement Construction

In section 2.4 I argued that verbs like laisser and the perception verbs in Romance may enter into either a VP complement construction or an infinitival ECM construction. In the ECM construction, these verbs take an untensed TP complement. The embedded subject appears at S-structure in the Spec of the embedded TP, where it is string-adjacent to, and governed by the matrix verb. In such a configuration Exceptional Case Marking (ECM) is expected to apply; the matrix verb should Case mark the embedded subject. Thus, the Case-marking pattern should be quite different for the same verbs when they enter into the TP complement construction and when they enter into the VP complement construction. I will now show that this is correct.

An important argument for the ECM analysis of the Romance perception verbs is the Case that is realized on the embedded subject. In the ECM construction, an embedded pronominal subject may cliticize onto the matrix verb; in the pronominal form, one can actually tell whether the subject is accusative or dative. The TP complement is distinguishable from the VP complement construction by the Case realized on the embedded subject clitic. In the VP complement construction illustrated in (61) - (62), the Case to the embedded subject depends on the transitivity of the embedded verb, just as in the causatives; it is accusative if the embedded verb has no object, and dative if the embedded verb has an object. In the TP complement construction in (63) - (64), on the other hand, the embedded subject receives accusative Case from the matrix verb regardless of the transitivity of the embedded verb.

VP complement construction

(61) a. Jean lui voit manger la pomme.
'Jean sees him-dat eat the apple.'

b. Jean le voit travailler.
'Jean sees him-acc work.'

(62) a. Pierre lui a laissé réparer ma voiture.
'Pierre let him-dat repair my car.'

b. Pierre l'a laissé travailler.
'Pierre let him-acc work.'

TP complement construction

(63) a. Jean le voit manger la pomme.
'Jean sees him-acc eat the apple.'

b. Jean le voit travailler.
'Jean sees him-acc work.'

(64) a. Pierre l'a laissé réparer ma voiture.
'Pierre let him-acc repair my car.'

b. Pierre l'a laissé travailler.
'Pierre let him-acc work.'

The examples classified as the VP complement construction appear to be interchangeable with those classified as the TP complement construction. Thus, it is necessary to ensure that the examples just given are classified correctly. In fact, there is a correlation between the position of the object clitic and the Case that is realized on the embedded subject. Recall that clitic climbing may only apply out of the VP complement. If the object clitic climbs into the matrix clause, the embedded subject receives dative Case. This is illustrated in (65). The sentences in (65) represent the VP complement construction, in which the embedded subject receives Case from the embedded verb; because the embedded verb has an accusative Case-marked object, the subject must be dative. If, however, the object clitic remains within the embedded clause, the subject receives accusative Case, as illustrated in (66). The sentences in (66) represent the TP complement, in which the subject receives Case directly from the matrix verb; in this case, the embedded subject must be accusative even though there is an accusative Case-marked object.

VP complement construction

(65) a. Jean la lui voit manger.
*Jean la le voit manger.
'Jean sees him-dat eat it.'

b. Pierre la lui a laissé réparer.
*Pierre la l'a laissé réparer.
'Pierre let him-dat repair it.'

TP complement construction

(66) a. Jean le voit la manger.
*Jean lui voit la manger.
'Jean sees him-acc eat it.'

b. Pierre l'a laissé la réparer.
*Pierre lui a laissé la réparer.
'Pierre let him-acc repair it.'

Further evidence for the ECM analysis comes from passivization and the interaction of passive and clitic placement. It is well-known that passivization can apply to an ECM verb, taking away the Case assigning ability of the matrix verb, and thus the Case to the embedded subject. This subject will then move to the matrix subject position, where it receives nominative Case from the matrix T, as in the English sentence (67).

(67) John$_i$ was believed t_i to be intelligent.

Passivization also applies to the Romance perception verbs in the ECM construction (with some lexical idiosyncrasies in the ability of a given verb to undergo passivization, as well as some differences across speakers in acceptability). This is illustrated in (68) - (70), with (69a) from Burzio (1986: 300).

(68) French
a. Pierre a été entendu réciter les poèmes (par les enfants).
'Peter was heard recite the poems (by the children).'

b. Les enfants ont été vus manger les pommes (par leurs parents).
'The children were seen eat the apples (by their parents).'

(69) Italian
a. Giovanni fu visto parlare con Maria.
'Giovanni was seen speak with Maria.'

b. Paolo fu sentito cantare una canzone.
'Paolo was heard sing a song.'

(70) Spanish
a. ?Pedro fue visto hablar con María.
'Pedro was seen speak with Maria.'

b. ?Pedro fue visto robar el auto (por Juan).
'Pedro was seen steal the car (by Juan).'

It is clear that the passives in (68) - (70) are based on the ECM configuration and not the VP complement configuration. In the passive sentences in (68) - (70), if the lower object is cliticized, the clitic must appear on the lower verb, and cannot appear on the matrix verb, as in (71) - (73). If the passive were based on the VP complement configuration, then the clitic would be required to climb. In other words, the grammaticality of the (a) and (b) examples would be reversed.

(71) French
a. Pierre a été entendu les réciter (par les enfants).
'Peter was heard them recite (by the children).'

b. ?*Pierre les a été entendu réciter (par les enfants).
'Peter them was heard recite (by the children).'

(72) Italian
a. Paolo fu sentito cantarla (dai bambini).
'Paolo was heard sing it (by the children).'

b. *Paolo la fu sentito cantare (dai bambini).
'Paolo it was heard sing (by the children).'

(73) Spanish
a. ?Pedro fue visto robarlo (por Juan).
'Pedro was seen steal it (by Juan).'

b. *Pedro lo fue visto robar (por Juan).
'Pedro it was seen steal (by Juan).'

Thus, *laisser* and the perception verbs, when they take a full TP complement, participate in an ECM construction. In this construction, the matrix verb directly Case-marks the embedded subject, always accusative, and the embedded subject may become the subject of the passive ECM verb.

(74) Jean voit [$_{TP}$ Pierre [$_{VP}$ manger [$_{NP}$ la pomme]]].
Acc Acc

5. Conclusion

The hypothesis that Romance causative verbs take a bare VP complement combines with the recent subject under VP hypothesis to account for the difficult range of data concerning the placement of the embedded subject argument, and the Case that appears on it. The account presented here posits that the external argument of the embedded verb is a subject at all levels of derivation. It is generated within the maximal projection of the V, and remains within the embedded VP. Because the VP complement cannot bear Case, the Case of the causative verb is transmitted to the embedded verb; the embedded subject is then Case-marked directly by the embedded verb. Thus, we found that the Case that is realized on the embedded subject argument is directly affected by the transitivity of the embedded verb -- whether or not there is an object argument that also requires Case from the verb, whether or not the embedded verb takes an inherent dative or indirect object, or whether the embedded verb is a Case assigner.

The account presented here allows us to maintain the notion that this argument is a subject at all levels, and requires no operations of internalizing an external argument. The account also assumes no operations of V, V', or VP raising for Romance; the embedded VP remains in its base position, with the embedded subject resting inside the VP.

NOTES

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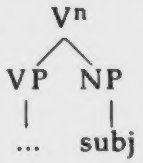
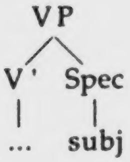
1. The prepositional element a in (2b) does not indicate that the embedded subject is Case-marked dative. In Spanish, animate accusative Case-marked NPs are always preceded by a. The Case to the subject can be seen only when pronominalized, in sentences such as (5).

2. There is some variation in the literature concerning the base position of the VP-internal subject. Koopman and Sportiche (1988) argue that the subject is in an adjoined position, outside the VP, but under V^{max}, as in (i). Others (Kuroda, 1988; Kitagawa, 1986) assume that it rests in the Spec of VP, as in (ii). And finally, Fukui & Speas (1986) argue that the maximal projection of V is V', which iterates, and the subject is generated inside the maximal V', as in (iii). For purposes of this paper, I remain neutral with respect to these proposals, but for puposes of exposition, I will diagram the sentences as in (ii).

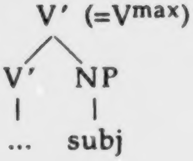
(i)



(ii)



(iii)



3. The literature contains some differences concerning the actual inflectional functional category labels. Some argue that the top functional category is TP (for Tense Phrase), some use IP; and and Belletti (1988) analyses the inflectional categories with Agreement Phrase (AgrP) above TP. For purposes of this paper, the actual node labels are irrelevent. What is crucial here is that there be at least one functional head of S. I will continue to use TP as the highest projection, taking an AgrP, and an optional NegP in between.

4. Given the position of the embedded subject in causatives, it might be tempting to analyze free inversion in Romance, as in (i) (examples from Burzio, 1986), in the same manner. However, even though it is possible that the inverted subject position is actually its base position, there are crucial differences between the subject under a causative and the subject in free inversion. As Burzio (1986) has argued, an inverted subject forms a chain with the Spec of TP subject position, and receives nominative Case from T via this chain. In the causatives, I will argue that the VP-internal subject is Case-marked by V, and not by T.

(i) a. Telefona Giovanni.
'Giovanni telephones.'
b. Ha parlato Giovanni.
'Giovanni has spoken.'

5. The Italian and Spanish equivalents of (16b) are grammatical, however. The matrix verb 'want' in Italian (volere) and Spanish (quiere) is a restructuring verb. The explanation for the fact that clitic climbing applies in restructuring is that these verbs optionally take a VP complement. When the complement is a VP, clitic climbing results. When the complement is larger than a VP, there is no clitic climbing (cf. Picallo, 1985; Rochette, 1989; Rosen, 1989).

6. A parallel distinction was pointed out in Ritter and Rosen (1991) for the English causatives have and make. There it was argued

that the complement of have is a bare VP, and the complement of make is headed by an inflectional functional projection. As illustrated in (i), Ritter and Rosen found a strong contrast in the ability of the causative verb to take an individual level predicate as its complement.

(i) a. John made Paul like French cooking.
b. *John had Paul like French cooking.

7. Some French speakers accept (20a), but clearly interpret it as referring to a change of state, rather than a permanent, ongoing property of Marie (thus, I have indicated it as marginally acceptable rather than totally out). Similarly, speakers report that (20b) can only mean that Marie is made to come to know about French, not that she is forced to know (how to speak) French. In like vein, (i) can only mean that Marie is forced to speak French at a particular moment, and not that she is forced to be able to speak French:

(i) Jean fait parler le français à Marie.

8. Unlike the object clitic in the TP complement, the subject must move up to the matrix T. The subject rests in Spec of TP (where it receives accusative Case from the matrix ECM verb); moving onto the embedded T would constitute unlicensed downward movement. Thus, the subject clitic must move up to the closest c-commanding T.

9. It is apparent that the causative verb cannot enter into the ECM construction that 'let' and the perception verbs can. That is, speakers will consistently reject sentences like (i).

(i) *Jean a fait Pierre la réparer.
'Jean made Pierre repair it.'

It is not known exactly why this is, and an exploration of this matter is beyond the scope of this paper. However, suggestions have been made concerning differences in the lexical representation and selectional characteristics of the verbs (Rosen, 1989). In addition, in the Mexican, Columbian, Peruvian and Bolivian dialects of Spanish, the causative verb hacer does appear to enter into the TP complement construction. Speakers of these dialects will accept sentences like (ii), in which the embedded subject appears between the two verbs. See Treviño (1990) for a full description of the data.

(ii) Hice a Juan arreglarla.
'I made Juan repair it.'

10. Judgements of (47c) vary depending upon dialect. In the Mexican dialect, speakers will generally use only the accusative clitic (47b) for the embedded subject. However, in River Plate Spanish, speakers accept the dative clitic.

11. Case transmission should also be possible through PP, but this is irrelevant here. See, however, Baker (1988b) for use of such a phenomenon of Case transmission in PP complements.

12. The parallel between double object predicates and causatives in a language like Kinyarwanda is relevant within an analysis of morphological causatives in which the causative verb takes a VP complement, just as in Romance. V-to-V raising subsequently takes place to satisfy the affixal requirements of the causative verb. For specifics of this verb incorporation, see Baker (1988a), and as applied directly within a VP complement account, see Rosen (1989).

13. As mentioned in note 9, there are some dialects of Spanish in which the causative verb may take a TP complement, and therefore will exceptionally Case-mark the embedded subject directly. In these dialects, the embedded subject appears between the two verbs, and clitic climbing does not take place (Treviño, 1990). This is illustrated in (i).

(i) Hice a Juan arreglarla.
'I made Juan repair it.'

As pointed out by Reed (1990a; 1990b), there are also some nonstandard dialects of French in which the embedded object and subject may simultaneously appear in accusative Case, though this is only the case when the embedded subject is cliticized. An example from Reed (1990a) appears in (ii).

(ii) ...pour aller travailler. Mais...je peux pas la faire lâcher l'école, elle est si juene...
'...to go to work. But...I can't make her-acc drop out of school, she's so young...'

Both Treviño and Reed report that these respective constructions have an accompanying semantic distinction -- they represent unambiguous direct causation, whereas the ordinary causative construction is ambiguous between a direct and an indirect causative reading. This semantic distinction is reminiscent of the distinction between direct/indirect causatives found in Japanese (cf., for example, Shibatani 1973). In Japanese, the distinction is between the -o (accusative) and the -ni (dative) causative. In the -o causative, the embedded subject appears in accusative Case, and the construction receives a direct reading. In contrast, in the -ni caustive, the subject appears in dative Case, and the construction receives an indirect reading.

There appears to be a correlation between accusative Case marking on the embedded subject and the direct causative reading. I would like to suggest that in Japanese, and in these dialects of French and Spanish, the causative verb is directly Case-marking the embedded subject, and the Case that it gives to the subject is accusative. When the causative verb directly Case-marks the embedded subject the semantics is one of direct influence on that subject, and the direct causative reading results. The exact syntactic mechanisms for this are right now unknown, but the correlation between the direct reading, and accusative Case or the position of the subject is clear.

14. Though given that the two constructions look identical other than the realization of the embedded subject, it is difficult to tell whether the optional subject stems from the faire par or the faire infinitive construction. It will become clear from the analysis that when the 'subject' does not appear on the surface, this must be the faire par construction.

15. But see Baker, Johnson, and Roberts (1989) for quite a different view of passivization. It is not crucial here that this process be viewed as passivization per se, but only as the suppression of an external argument, and the Case-absorption that follows.

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LOCATIVE INVERSION IN CANTONESE

Sui-Sang Mok

Abstract: This paper proposes that locative inversion is a widespread syntactic process in Cantonese. The sentence-initial locative phrases in the Locative Inversion sentences are argued to be subjects which come from the postverbal complement position in the majority of cases; but it is also possible to move a preverbal adjunct locative phrase to the subject position in the existential "yau"(have) sentences. This movement hypothesis is crucially dependent on the relative distribution and co-occurrence restrictions between the sentence-initial locative phrases and their coreferent proform "hai dou"(there). One important observation drawn from the SuperRaising analysis of the sentence-initial locative phrases is that "pro" in Chinese, albeit an A-specifier, will not block A-movement, unlike what is predicted by the theory of Relativized Minimality.

I. Introduction

This paper will investigate the phenomenon of Locative Inversion in Cantonese. By Locative Inversion, I mean that in a sentence, the locative phrase (henceforth, LP) appears at the sentence-initial position and its logical subject[1] occurs postverbally. The following are two typical examples.

(1)	(hai)	chong	seung min	fan	jo	go	yan	(hai dou)[2]
	at	bed	top/on	lie	ASP[3]	CL	person	there

"There is a person lying on the bed."

(2)	(hai)	cheung	seung min	gwaa	jo	fuk	waa	(hai dou)
	at	wall	top/on	hang	ASP	CL	picture	there

"There is a picture hanging on the wall."

The interesting things about these sentences are that (i)the locative phrases can be prepositional phrases headed by the preposition "hai"(at/in/on/from) and (ii) some kind of proform "hai dou"(there) can coexist with the LPs although it must occupy a postverbal position in this case.

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The first part of the paper will try to establish the D-structure for sentences like (1) and (2), which are confirmed to be ergative (unaccusative) in nature. The prepositional LPs in the D-structure are claimed to be postverbal complements and they move to the subject position at S-structure. The proform behaves like some kind of resumptive pronoun and is coreferent to the sentence-initial LPs in the S-structure. However, Locative Inversion sentences like (2), which consist of verbs such as "lim"(paste), "gwaa"(hang) and "jong"(install), may also have an accusative reading. In this second interpretation, (2) will have a D-structure where the subject position is occupied by a "pro" instead. The prepositional LP in this context is also hypothesized to originate in the postverbal complement position but it may only undergo movements like preposing and topicalization; hence it will not be a subject in the S-structure.

The proposal of Locative Inversion will entail a different conception of θ-role- and Case- assignment in Cantonese from that of Mandarin as described by Li (1990). Because of this, section V of Part 1 will be devoted to briefly comparing the systems of θ-role- and Case- assignment in Cantonese and Mandarin. I posit that Cantonese should be regarded as SVO both at D-structure and S-structure, and prepositonal phrases in Cantonese can be Case-marked.

Part 2 will, in the first place, give further justification to the argumental status of the LPs in (1) and (2) when they appear in the D-structure. I will compare the extraction behaviour of the LPs with that of duration expressions which are adjunct-like. The comparison is based on Rizzi's(1990) theory of Relativized Minimality which pays particular attention to the asymmetry of arguments and adjuncts with respect to their extraction behaviour. Second, the subjecthood of the sentence-initial LPs in (1-10) is reinforced as they are shown to participate in SuperRaising. One important observation drawn from the analysis of SuperRaising is that "pro" in Chinese, albeit an A-specifier, will not block A-movement, unlike what is predicted by the theory of Relativized Minimality. Third, the movement analysis in Part 1 is extended to the type of existential "yau"(have) sentences that begin with a LP. These sentences are also claimed to have undergone locative inversion and the sentence-initial LPs may come from the postverbal complement position or the preverbal adjunct position. This claim is comparable to Freeze's(1991) crosslinguistic analysis of "have"-structures as locative sentences, but differs widely from Huang's(1987,1989) analysis of those existential "you"(have) sentences in Mandarin that begin with a LP. The last section concludes with a summary of the important generalizations that have been made in this investigation.

II. Theoretical Framework

The general framework of Government and Binding will be employed for the analysis in this paper. Particular reference will be given to the X-bar theory, θ-theory, Case theory, the Extended Projection Principle and the theory of Relativized Minimality.

III. Prepositional Locative Phrase as Subject

In this section, I will first establish that the prepositional LPs of the following sentences are subjects in the S-structures.

(3)	(hai)	che	leui min	cho	mun	saai	di	hok saang	(hai dou)
	at	car	inside	sit	full	all	those	student	there

"*The car was sat full by the students."

(4)	(hai)	uk	leui min	jyu	jo	saam	go	feileutban yan	(hai dou)
	at	house	inside	live	ASP	three	CL	Philippine people	there

"There are three Philippinos living inside the house."

(5)	(hai)	kiu	haa min	kei	jo	hou do	yan	(hai dou)
	at	bridge	under	stand	ASP	many	people	there

"Many people are standing under the bridge."

(6)	(hai)	baan gung sat	leui min	lei mai[4]	jo	go	chat lou	(hai dou)
	at	office	inside	hide	ASP	CL	thief	there

"A thief is hiding inside the office."

(7)	(hai)	mun	hau min	lim	mun	saai	di	gung jai	(hai dou)
	at	door	back-side	paste	full	all	those	pictures	there

"All the backside of the door was pasted with those pictures."

(8)	(hai)	hak baan	seung min	se	jo	di	ying man	ji	(hai dou)
	at	blackboard	top/on	write	ASP	some	English	word	there

"Some English words have been written on the blackboard."

(9)	(hai)	fa yun	cheut min	jong	jo	yi sap	jan	dang	(hai dou)
	at	garden	outside	install	ASP	twenty	CL	lamp	there

"There are twenty lamps installed outside in the garden."

(10)	(hai)	toi	seung min	baai	mun	saai	faa	(hai dou)
	at	table	top/on	put	full	all	flower	there

"The whole table is occupied with flowers."

Before embarking on the analysis, I would like to make clear the categorial status of the beginning word "hai"(at/in/on/from) in sentences (1-10). The LPs of these sentences can appear between the subject and the VP in other contexts such as the one in

(11).

(11)	Ah Wong	hai	chong	seung min	tai	syu
		at	bed	top/on	read	book

"Ah Wong is reading on the bed."

Since the LP in (11) is in a non-Case position, the noun phrase "chong seung min"(bed-on) is most likely assigned Case by "hai", which is obligatory for the NP. As the LP is not a VP, "hai" must be a preposition, since only verbs and prepositions can assign Case.

In the study of locative inversion in English, which is regarded as some kind of stylistic rule, the sentence-initial prepositional LP is often conceived as a topicalized element (cf. Bower(1976), Coopmans(1989), Rochemont & Culicover(1990)). Xu and Langendoen (1985:5) also regard the sentence-initial LP in sentence (12) in Mandarin to be a topic.

(12)	zhouzi	shang	yau	shu;	chuang	shang	bu	hui	yau	shu
	table	on	have	book	bed	on	not	can	have	book

"On the table there are some books; on the bed there cannot be any books."
(Xu & Langendoen's (21))

There are apparently some signs that the LPs in sentences (1-10) may be considered as topics. Those phrases, with or without the preposition, must be definite in nature. Furthermore, pauses, which some people consider to be diagnostics for topics (although imprecise), may be inserted after the LPs. But these pieces of evidence are by no means conclusive. In fact deeper investigation suggests otherwise.

At least three pieces of evidence can be adduced to show that the sentence- initial LPs in (1-10) display syntactic characteristics that are absent in genuine topics like the ones in (13) and (14).

(13)	go	tiu	yu	(a),	Ah Chan	kam yat	hai	Aberdeen	maai	ge
	that	CL	fish	PART		yesterday	at		buy	PART

"That fish, Ah Chan bought it at Aberdeen yesterday."

(14)	go	gaa	che	(a),	Lou Li	gam jiu	jing	hou	jo
	that	CL	car	PART		this morning	fix	good	ASP

"That car, Lou Li fixed it this morning."

The first piece of evidence is related to the relative order between sentence adjuncts[5] and topics. In Cantonese, sentence adjuncts such as adverbials like "hou m hou coi" (unfortunately), "hou ho neng"(possibly) and "hou ho sik"(sadly) cannot precede a topic.

(15)*	hou ho neng	gaa	che,	Ah Chan	gam jiu
	possibly	CL	car		this morning
	hou ho sik	jung mei	jing	hou	
	sadly	not yet	jing	hou	
	hou m hou choi				
	unfortunately				

"Possibly/sadly/unfortunately, Ah Chan has not fixed the car this morning."

However, when the adverbials are put before the initial LPs in sentences (1-10), they are still well-formed. Using (4) as an example, we can construct the following sentence.

(16)	hou ho neng	(hai)	uk	leui min	jyu	jo
	possibly	at	house	inside	live	ASP
	hou ho sik	saam	rgo	feileutban	yan	(hai dou)
	sadly	three	CL	Philippine	people	there
	hou m hou choi					
	unfortunately					

"Possibly/sadly/unfortunately, there are three Philippinos living inside the house."

The second piece of evidence comes from the constraint in using correlative conjunctions. Sentences with topics always become ill-formed if they are structured with correlative conjunctions like "m jing ji...jung yau" (not only...but also).

(17)	*m jing ji	gaa	che,	Ah Chan	jing	waai	jo,	
	not only	CL	car		fix	bad	ASP	
	jung yau	go	cheung,	keui	sai lou	daa	laan	jo
	but also	CL	window	he	brother	hit	broken	ASP

"*Not only did that car, Ah Chan ruin, but also that window, his brother broke."

(18)	*?go	sai lou jai	m jing ji	Ah Chan	jung yi,	
	CL	child	not only		like	
	jung yau	keui	taai taai	dou	hei fun	(keui)
	but also	he	wife	also	like	(he)

"*The child, not only does Ah Chan like, but also his wife likes."

The normal ways of expressing similar ideas in (17) and (18) do not involve topicalization and their well-formed counterparts should appear as

(19)	m jing ji	Ah Chan	jing	waai	gaa	che,		
	not only		fix	bad	CL	car		
	jung yau	keui	sai lou	daa	laan	jo	go	cheung
	but also	he	brother	hit	broken	ASP	Cl	window

(20)	m jing ji	Ah Chan	jung yi	go	sai lou jai,	
	not only		like	CL	child	
	jung yau	keui	taai taai	dou	hei fun	(keui)
	but also	he	wife	also	like	(he)

In contrast, there are no problems in applying correlative conjunctions to sentences containing sentence-intial LPs.

(21)	m jing ji	(hai)	cheung	seung min	gwaa	jo	fuk	waa	(hai dou)
	not only	at	wall	top/on	hang	ASP	CL	picture	there
	jung yau	(hai)	tin faa baan	seung min	dou	lim	jo	hoi bou	(hai dou)
	but also	at	ceiling	top/on	also	paste	ASP	poster	there

"Not only is there a picture hanging on the wall, but some posters are also pasted on the ceiling."

(22)	(hai)	cheung	seung min	m jing ji	gwaa	jo	fuk	seung,
	at	wall	top/on	not only	hang	ASP	CL	picture
	jung yau	lim	jo	di	hoi bou	(hai dou)		
	but also	paste	ASP	some	poster	there		

"On the wall, a picture is hung and some posters are pasted."

The third piece of evidence is related to the idea that an ordinary topic usually cannot appear immediately after a subordinate clause. This is examplified by (23) and (24).

(23)	*?kam maan	sik	jo	fan	ji hau,	
	last night	eat	ASP	rice	after	
	gaa	che,	Ah Chan	jing	hou	jo
	CL	car,		fix	good	ASP

"*Last night after eating dinner, that car, Ah Chan fixed it."

(24)	*?yu go	Mary	m	lei,	gaa	che,
	if		not	come	CL	car
	Ah Chan	wui	jing	waai	keui	
		will	fix	bad	it	

"*If Mary does not come, that car, Ah Chan will ruin it."

Their well-formed counterparts should involve no topiclaization, as shown in (25) and (26).

(25)	kam maan	sik	jo	faan	ji hau,	Ah Chan	jing	hou	jo	gaa	che
	last night	eat	ASP	rice	after		fix	good	ASP	CL	car

"Last night after eating dinner, Ah Chan fixed the car."

(26)	yu go	Mary	m	lei,	Ah Chan	wui	jing	waai	gaa	che
	if		not	come		will	fix	bad	CL	car

"If Mary does not come, Ah Chan will ruin the car."

Contrary to ordinary topics, sentences with initial LPs can appear in similar contexts and are well-formed.

(27)	kam maan	sik	jo	faan	ji hau,	(hai)	cheung	seung min
	last night	eat	ASP	rice	after	at	wall	top/on
	yi ging	gwaa	jo	sap	fuk	waa	(hai dou)	
	already	hang	ASP	ten	CL	picture	there	

"Last night after eating dinner, ten pictures had been hung on the wall."

(28)	yu go	Mary	m	lei,	(hai)	tin faa baan	seung min	m
	if		not	come	at	ceiling	top/on	not
	wui	jong	yi sap	jan	dang	(hai dou)		
	will	install	twenty	CL	lamp	there		

"If Mary does not come, twenty lamps will not be installed on the ceiling there."

The above three tests confirm that the sentence-initial LPs cannot be genuine topics. I will now proceed to show that the sentence-initial LPs in (1-10) are subjects. For this purpose, I will argue that they are not adjoined to VP and they must precede INFL. The sentence-initial LPs can precede sentence adverbials and negation markers which are usually regarded as adjunctions to VP or preceding VP since they modify the scope of a VP. (29) and (30) are two examples.

(29)	(hai)	chong	seung min	si si	fan	jo	go	yan	(hai dou)
	at	bed	top/on	always	lie	ASP	CL	man	there

"There is a man always lying on the bed."

(30)	(hai)	chong	seung min	mou	yan	fan	(hai dou)
	at	bed	top/on	no	man	lie	there

"There is no man lying on the bed."

Some linguists like Zhou (1990:171) consider the adverbial "zongshi"(always) in Mandarin to be adjoined to I'. If I adopt this treatment, it will certainly help to ascertain that the LPs in (1-10) are linked to the [SPEC, IP].

Another supporting fact is that sentence-initial LPs can precede auxiliary verbs which are under the INFL node.

(31)	(hai)	chong	seung min	(dou)	ho yi	fan	leung	go
	at	bed	top/on	also	can/may	lie	two	CL
	sai lou jai	(hai dou)						
	child	there						

"The bed can also allow two children to lie on."

(32)	(hai)	cheung	seung min	(dou)	wui	gwaa	leung	fuk
	at	wall	top/on	also	will	hang	two	CL
	waa	(hai dou)						
	picture	there						

"Two pictures will also be hung on the wall."

There are now only two possible structural positions left for the sentence-initial LPs to attach themselves to---the I' adjunction and the [SPEC, IP]. Since the LPs are obligatory elements, as witnessed in (33), their adjunction to I' is not possible because it is an optional position.[6]

(33)	*gwaa	jo	fuk	waa	(hai dou)
	hang	ASP	CL	picture	there

(This is possible only if "hai dou" means "here".)

So the only position that the sentence-initial LPs can occupy in S-structure is the [SPEC , IP], the subject position.

The claim that the sentence-intial LPs are subjects is clearly supported by the fact that these LPs can undergo subject-to-subject raising (cf. Hou(1977), Li (1990)). The LPs can either precede or follow raising predicates like "hou chi"(likely/seem) and "hou ho neng"(possible),[7] suggesting that there is a raising operation involved.

(34)	hou chi	(hai)	chong	seung min	fan	jo
	likely/seem	at	bed	top/on	lie	ASP
	hou ho neng	go	yan	(hai dou)		
	possible	CL	people	there		

"It is likely/possible that a person is lying on the bed."

(35)	(hai)	chong	seung min	hou chi	fan	jo	go	yan
				likely/seem	lie	ASP	Cl	people
				hou ho neng	(hai dou)			
				possibly	there			

After all these tests, we can safely assume that the sentence-initial LPs in (1-10) are subjects.

IV. The D-Structure of Locative Inversion Sentences

In this section, I will first show that the verbs in the Locative Inversion sentences in (1-10) are unaccusative in nature. Then I will argue that the sentence- initial LPs originate in the postverbal complement position in D-structure and they move to the subject position at S-structure via a movement rule.

A. Locative Inversion Sentences Are Ergative Constructions

Perlmutter's Unaccusative Hypothesis (1978) distinguishes the unaccusative (ergative) verbs from the unergative (intransitive) verbs. The unaccusative verbs take a single argument which is base-generated in the structural object position at D-Structure and which bears either a theme or a patient role. On the contrary, the unergative verb takes an argument which occupies the structural subject position both at D- and S-structure and which is agentive in nature. Based on this insight, Burzio (1986:29) defines ergative verbs in terms of their lack of external θ-role.

(36) [Ergative verbs] refer to verbs which are subcategorized for a direct object and which do not assign a subject θ-role.

The verbs in the Locative Inversion sentences in Cantonese and Mandarin are usually verbs denoting presence, appearance and disappearance, which are similar to the inventory of ergative verbs discussed in Burzio (1986). Besides this superficial comparison, Zhou (1990:40-43) suggests two ergative diagnostics for Mandarin, the contrastive word orders and the reference of null objects. I will only adopt the first one for the analysis of Cantonese since the second one is problematic.

Sentences containing typical unergative(intransitive) and accusative (transitive) verbs do not allow postposition of the subject(see Huang(1987), Zhou(1990)). In contrast, in Locative Inversion sentences like (1-10), the "logical"(potential)[8] subject can occur postverbally, showing that the verbs are unaccusative in nature. (37a) and (38a), which consist of the verbs "cry" and "read", do not permit "subject postposition", as illustrated in (37b) and (38b). (39a) consists of the verb "fan"(lie) and "subject postposition" is allowed, as shown in (39b).

(37)a.	hou do	sai lou jai	hai	chong	seung min	haam		
	many	child	at	bed	top/on	cry		

"There are many children crying on the bed."

b.	*(hai)	chong	seung min	haam	jo	hou do	sai lou jai	(hai dou)
	at	bed	top/on	cry	ASP	many	child	there

(38)a.	hou do	sai lou jai	hai	chong	seung min	tai	syu
	many	child	at	bed	on	read	book

"Many children are reading on the bed."

b.	*(hai)	chong	seung min	tai	syu	hou do	sai lou jai
	at	bed	top/on	read	book	many	child

(39)a.	hou do	sai lou jai	fan	hai	chong	seung min
	many	child	lie	at	bed	top/on

"There are many children lying on the bed."

b.	(hai)	chong	seung min	fan	jo	hou do	sai lou jai	(hai dou)
	at	bed	top/on	lie	ASP	many	child	there

That the verbs in sentences (1-10) are unaccusative in nature will, according to Burzio's hypothesis, predict that the argument, which bears the theme role and which is a "logical"(potential) subject, will occupy the object position in the D-Structure. Since there is no NP that bears the agent role, the external argument (the structural subject) position in the D-structure will be left empty.

The above prediction will automatically dismiss the possibility that sentence- initial LPs, which I have argued to be surface subjects, are base-generated in that position, as unaccusative verbs are defined by Burzio not to assign a subject θ-role. There is, in reality, evidence to support that the LPs take up the structural subject position via movement from the postverbal position.

B. The Proform "hai dou"(there)---Evidence for Movement

The hypothesis that the prepositional LPs originate in the postverbal position is fully justisfied when we examine the distribution of the proform "hai dou" (there), which optionally appears at the end of all the sentences in (1-10). First of all, the proform cannot exist on its own except when it means exactly the same as as the deictic adverb "here" in English and the action related to it refers to the immediate presence.

(40)
paa
lie prostrate
cho
sit
kei
stand
fan
lie
gwai
kneel

hai dou
here

But it cannot coocur with a prepositional LP under any circumstances.

(41)

(*hai	chong	seung min)	cho	(*hai	chong	seung min)
at	bed	top/on	sit	at	bed	top/on

hai dou	(*hai	chong	seung min)
here	at	bed	top/on

However, when "hai dou" means something like "there" in English, a prepositional LP will also be present simultaneously. But the distributions of the proform and the LP are constrained. They cannot be placed immediately next to each other, as shown in

(42)

hai	chong	seung min	keui	cho	jo
at	bed	top/on	he	sit	ASP

(*hai	chong	seung min)	hai dou	(*hai	chong	seung min)
at	bed	top/on	there	at	bed	top/on

Furthermore, the LP must precede the proform.

(43)

(hai)	kiu	haa min	kei	jo	go	yan	hai dou
at	bridge	under	stand	ASP	CL	people	there

"There is a man standing under the bridge."

(44)

(hai)	ho	leui min	yau	yan	hai dou	yau seui
at	river	inside	have	people	there	swim

"There is a man swimming in the river."

The LP can occupy the position where the proform can appear; but the reverse is not possible.

(45)	yau	yan	cho	jo	hai	chong	seung min
	have	people	sit	ASP	at	bed	top/on

"There is a man sitting on the bed." (cf. (42))

(46)	*hai dou	cho	jo	go	yan
	there	sit	ASP	CL	people

(47)	yau	yan	hai	ho	leui min	yau seui
	have	people	at	river	inside	swim

"There is a man swimming in the river." (cf. (44))

(48)	*yau	yan	hai dou	yau seui
	have	people	there	swim

((46) and (48) is possible if "hai dou" means "here".)

The relative distribution of the prepositional LP and the proform "hai dou" (there) discussed above inevitably leads to the conclusion that the proform is used to fill up the gap after the LP is moved, thus behaving like a resumptive pronoun.

Turning back to the D-structure representation of the Locative Inversion sentences in (1-10), we can safely assume that the prepositonal LPs are base-generated as sister to the right of the verb and the NP which bears the theme or patient role. This assumption is based on the analysis of the distribution of the proform "hai dou"(there) in the section above, together with the fact that the prepositional LPs receive a locative θ-role from the verb. The argumental nature of the prepositional LP in D-structure is shown by the fact that it is obligatory in the following sentence.

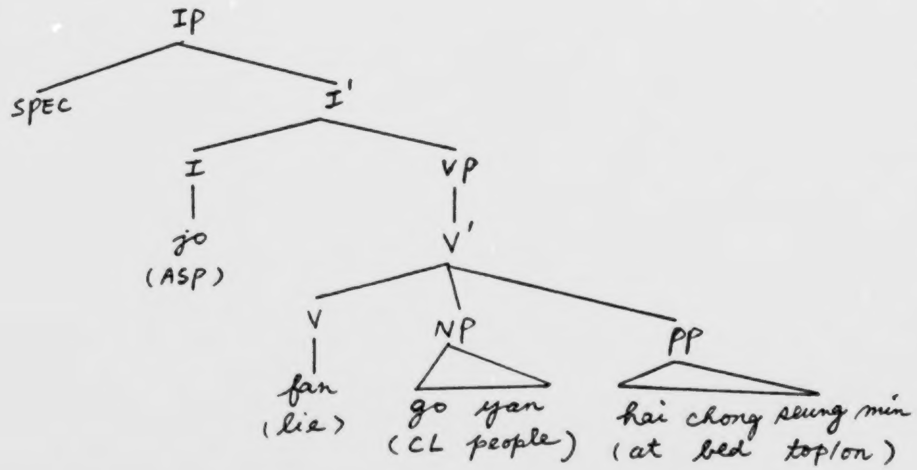
(49)	yau	go	yan	fan	jo	*(hai	chong	seung min)
	have	CL	people	lie	ASP	at	bed	top/on

"There is a man lying on the bed." (cf. (1))

Furthermore, following Li(1990) and Zhou(1990), I assume that unaccusative verbs can assign Case to their NP complements.[9] The D-structure of sentence (1), (which is repeated here as (50a)), for example, will be (50b).

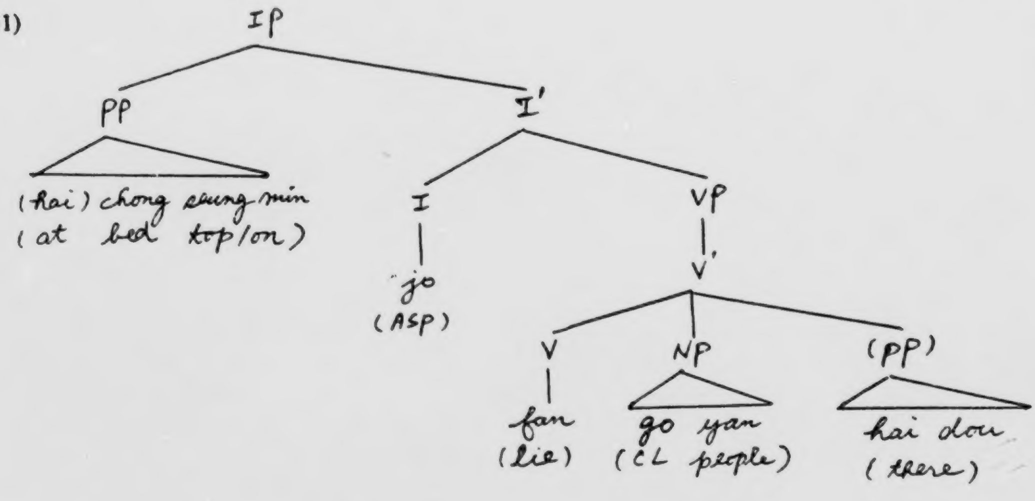
(50)a.	(hai)	chong	seung min	fan	jo	go	yan	(hai dou)
	at	bed	top/on	lie	ASP	CL	people	there

b.


IP
SPEC
I'
I
jo
(ASP)
VP
V'
V
fan
(lie)
NP
go yan
(CL people)
PP
hai chong seung min
(at bed top/on)

That the subject position is empty at this stage provides a motivation for some kind of element to move in to satisfy the Extended Projection Principle (that sentences must have overt subjects). Theoretically, with a D-structure like (50b), there are two possibilities of movement, either moving the LP or the object NP. As the structure we are analyzing now is Locative Inversion, the LP therefore moves. As regards the possbility of moving the object NP, I will leave it for further research. (Note that on the previous page, I have already assumed that ergative verbs can assign inherent Case; the movement of the object NP to the [SPEC, IP] will make it doubly Case-marked). Applying the rule of move-α, the S-Structure of (1) will be

(51)


IP
PP
(hai) chong seung min
(at bed top/on)
I'
I
jo
(ASP)
VP
V'
V
fan
(lie)
NP
go yan
(CL people)
(PP)
hai dou
(there)

That the preposition "hai"(at/in/on/from) in the sentence-initial LPs of (1-10) may be null is due to the application of a late rule at PF.

The movement of the prepositional LP into the [SPEC, IP] is an A-movement. It basically abides by the properties of Substitution Movement as laid out in Chomsky(1986:4)--only a maximal projection can move to the specifier position. Besides, the proform "hai dou"(there) or the trace(when the proform is null) left behind after the movement is properly head-governed by the verb, thus satisfying the ECP(see discussion in Part 2).

But a question arises from the analysis above since the prepositional LP moves into a Case-marked position (i.e. [SPEC, IP]). Stowell's(1981:146) Case Resistance Principle (CRP) forbids PPs and clauses to receive Case becasue both of them bear Case-assigning features (Ps in PPs and [+tense] in clauses).

(52) The Case-Resistance Principle (CRP)
Case may not be assigned to a category bearing a Case-assigning feature.
(Stowell's (66))

But the CRP has suffered a lot of criticism. Firstly, Li(1990) argues that both finite and non-finite clauses in Mandarin Chinese can be assigned Case despite the fact that she still maintains the impossibility of assigning Case to PPs. Secondly, Fabb(1984) and Koopman(1984) both advocate that PPs can be assigned Case. Fabb suggests that the complement PP in English is assigned Prepositional Case "Cp" which will percolate down to the preposition. Koopman, in studying Vata(and Gbadi), comes up with the following generalisation.

(53) a. NPs and PPs must occur in Case positions
b. Case is assigned to the left in Vata. (Koopman's (26),p.115)

She also remarks that "PPs,.....would be some kind of disguised NPs which have to be Case-marked"(p.115). In fact, the prepositional LPs in Cantonese does behave like NPs in some contexts, which therefore enhances the plausibility of saying that they can be Case-marked. This piece of evidence is cited in section V.

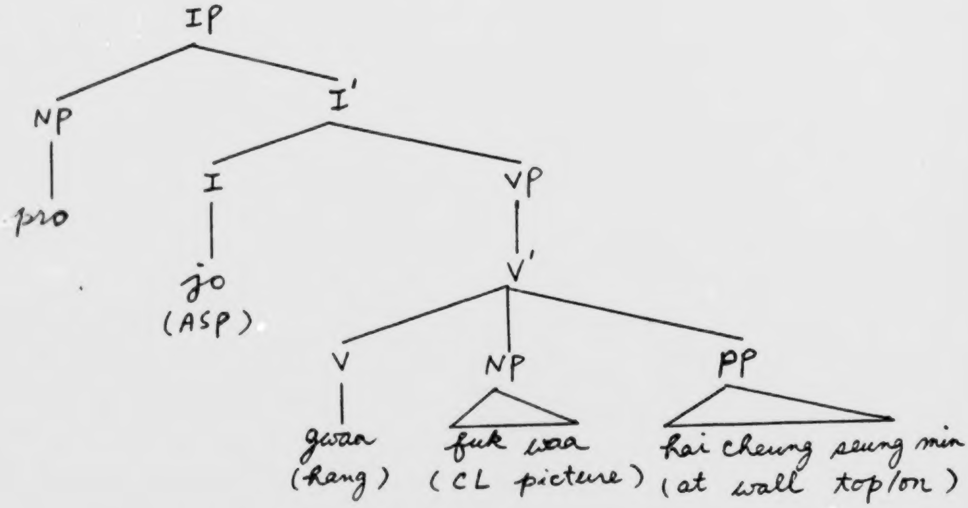
C. The D-structure of the Accusative Counterparts of Some Locative Inversion Sentences

As mentioned in Section I, some of the Locative Inversion sentences like (2, 7-10) have accusative counterparts. In this case, the surface form of (2), which is repeated here as (54a), will be ambiguous between the unaccusative and the accusative reading. The latter will be interpreted to have a D-structure like (54b).

(54)a.	(hai)	cheung	seung min	gwaa	jo	fuk	waa	(hai dou)
	at	wall	top/on	hang	ASP	CL	picture	there

"There is a picture hanging on the wall."

b.


IP
NP
I'
pro
I
VP
jo
(ASP)
V'
V
NP
PP
gwaa
(hang)
fuk waa
(CL picture)
hai cheung seung min
(at wall top/on)

This is particularly obvious if sentence (2)(with slight modification) appears as part of a discourse and the agent is omitted to avoid repetition as it is mentioned previously. The following is an example.

(55)	A:	nei	sai lou	hai	cheung	seung min	gwaa	jo
		you	brother	at	wall	top/on	hang	ASP
		keui	ge	waa	hai dou			
		he	POSS	picture	there			

"Your brother has hung his picutre on the wall."

nei	wui	hai	bin dou	gwaa	nei	fuk	waa?
you	will	hai	where	hang	you	CL	picture

"Where will you hang your picture?"

B:	dou	wui	hai	cheung	seung min	gwaa
	also	will	at	wall	top/on	hang

"I will also hang my picture on the wall."

(or seriously:

ngo	dou	wui	hai	cheung	seung min	gwaa	ngo	fuk
I	also	will	at	wall	top/on	hang	I	CL
waa	(hai dou)							
picture	there							

"I will also hang my picture on the wall.")

Note that the adverb "dou"(also) and the auxiliary verbs "wui"(will), unlike the cases in (31-32) where they must follow the prepositional LPs, precede them in (55). This is evidence to show that the LPs in (55) are not the same as those in (1-10) and these LPs are in VP-adjoined(or topicalized) position(see further examples in (57)) rather than in the subject position. Since the proform "hai dou"(there) also exists, we can assume that, as the analysis above, the prepostional LPs originate in the postverbal complement position.

With the subject lexicalized (say Ah Chan), (54b) will result in a sentence like (56).

(56)	Ah Chan	gwaa	jo	fuk	waa	hai	cheung	seung min
		hang	ASP	CL	picture	at	wall	top/on

"Ah Chan hung a picture on the wall."

When the LP is preposed or topicalized, (56) becomes either (57a) or (57b).

(57)a.	Ah Chan	hai	cheung	seung min	gwaa	jo
		at	wall	top/on	hang	ASP
	fuk	waa	(hai dou)			
	CL	picture	there			

b	hai	cheung	seung min	Ah Chan	gwaa	jo
	at	wall	top/on		hang	ASP
	fuk	waa	(hai dou)			
	CL	picture	there			

V. Theoretical Interests of the Movement Analysis in Cantonese Locative Inversion: A Comparison of Cantonese and Mandarin

The claim that sentence-initial LPs in (1-10) originate in the postverbal complement position in D-structure suggests that the word order constraint in Cantonese may be very different from that of Mandarin as proposed by Li(1990). According to her, the Chinese [Mandarin] Word Order Constraint consists of the following principles.

(58) a. Chinese is head-final except under the requirement of Case assignment.
b. Case is assigned from left to right in Chinese.
c. A Case assigner assigns at most one Case. (Li's (23), chapter 1, p.11))

This hypothesis predicts that only Case receivers occur immediately to the right of the head; otherwise, the head occurs finally. Since PPs are not subject to the Case Filter, they are not assigned Case and do not occur postverbally. If the analysis so far in this paper is correct, Cantonese will not be subject to the constraint that only Case receivers can occur postverbally because there are complement prepositional phrases following the verb.

As a matter of fact, Li's analysis of the apparent postverbal prepositional phrases in Mandarin cannot be applied to that in Cantonese. Li considers the postverbal locative PP in the following Mandarin sentence not a real PP.

(59)	ta	shui/tiao	zai	dishang
	he	sleep/jump	at	floor-surface

"He sleeps on/jumps to the floor." (Li's (37a), ch.3, p.59)

She proposes that the VP structure in (59) is [[$_{V}$ V P] NP], where P is reanalysed with V and forms a complex verb. Alternatively, the P may simply be a V, combining with the main verb to become a compound V: [[$_{V}$ V V] NP]. Therefore, the sentence in (59) does not violate the word order constraint. There are simply no real PPs in postverbal position(p.59). The basic evidence she puts forward is that verbs like "shui"(sleep) and "tiao"(jump) form a unit with "zai"((be)at), as it is impossible to insert aspect markers between "shui/tiao" and "zai".

However, this is not what we find in the case of the postverbal PPs in Cantonese. Aspect markers can always be inserted between the verb and the PP, showing that no reanalysis has taken place. This can be seen from sentences (1,2,5,6,8,9).

In relation to the Chinese Word Order Constraint, Li also assumes that the θ-positions and Case positions in Mandarin Chinese do not coincide. θ-role assignment (at D-structure) is from right to left; Case-assignment (at S-structure) is from left to right. Based on these assumptions, Li (1990:11) claims that Mandarin Chinese is "head-final (SOV, postpostional, N-final) at D-structure and SVO, prepostional, N-final at S-structure". The proof that prepositonal LPs in Cantonese can occur postverbally at D-structure (and S-structure) implies that θ-role assignment in Cantonese is from left to right. Since the word order of Cantonese phrase structure is basically SIMPLE/COMPLEX MODIFIER-HEAD and HEAD-ARGUMENT, and if we consider the headness parameter a "lexical relationship between head and arguments"(cf.

Huang(1990),p.57), then Cantonese is similar to English in that Case-positions and θ-positions coincide.

The proof that the prepositional LPs move from the postverbal non-Case position at D-structure to the Case-marked subject position at S-structure indicates that PPs in Cantonese can receive Case(in some situations). In this respect, Cantonese pairs off with English but diverges from Mandarin (using Li's account in (1990)) since English but not Mandarin also allows PPs to appear in Case positions. In English, for example, we can say "The mouse ran out from [under the bed]". That PPs in Cantonese can receive Case also predicts that PPs in this language may behave like lexical NPs in some ways since lexical NPs must be assigned Case. Indeed, the prediction is borne out because like NPs, PPs can occur in the prenominal modifier environment as in

$$(60)\ [\underset{\left\{\begin{matrix}\text{NP}\\ \text{PP}\end{matrix}\right\}}{\underline{\qquad}}\ \left\{\begin{matrix}\varnothing\\ \text{ge}\\ \text{CL}\\ \text{DD}\end{matrix}\right\}\ \text{N}\,]$$

where "ge" is a modifier marker, "CL" is a classifier and "DD" is a demonstrative determiner. In Cantonese, the following sentences containing PPs as prenominal modifiers are definitely well-formed.

(61)	keui	hei fun	hai	cheung	seung min	(go)	fuk	waa
	he	like	at	wall	top/on	that	CL	picture

"He likes that picture which is hanging on the wall."

(62)	keui	yiu	sou	saai	hai	toi	haa min	ge	lap sap
	he	want	sweep	all	at	table	under	MOD	rubbish

"He wants to sweep away all the rubbish that is under the table."

But according to Li, PPs in Mandarin can never occur in the environment of (60).

VI. Summary of Part 1

Part 1 of this paper has given a preliminary sketch for the locative inversion phenomenon in Cantonese. It has succeeded in establishing the D-structure for the Locative Inversion sentences as in (1-10), and has come to the conclusion that movement is involved--the postverbal complement PP moves to fill the empty subject position. It also raises the issue that Cantonese PPs can be assigned Case in some situations, thus echoing the findings by Fabb and Koopman. Because of these findings and generalizations, the paper also proposes that the Cantonese word order is SVO both at D- and S-structure.

With the establishment of all these fundamental claims, I will, in Part 2, look into more complicated syntactic processes like extraction of arguments and adjuncts across wh-islands and SuperRaising that are related to the Locative Inversion sentences. Besides, I will also examine "yau"(have) existential sentences that begin with a LP.

Part 2

I. Further Evidence for the Argumental Status of the Sentence-initial LPs

In the first part of this paper, I have argued that the sentence-initial LPs in (1-10) originate in the postverbal complement position at D-structure. The arguments I have advanced are that the LPs receive a locative θ-role from such verbs as "fan"(lie), "kei"(stand) and "gwaa"(hang) and these LPs are obligatory whether they are in the sentence-initial position as in (1-10) or in the postverbal position as in (49) or (56) of Part 1. This hypothesis is further justified, as we will see below, when we compare the LP's extraction behaviour with that of duration and frequency expressions which are adjunct-like(for the proof of the adjunct status of their Mandarin counterparts, see Tang(1990)). The comparison is based on Rizzi's(1990) theory of Relativized Minimality which helps to reveal the argumental status of the LPs.

The discussion in this section is in the following order. I will first outline the essential features of the principle of Relativized Minimality. Next I will show that besides the possibility of being an I'-adjunct, the negation marker "m" (not) in Cantonese can be the spec of VP, an A'-specifier. Then, I will contrast the extraction behaviour of the adjunct-like duration expressions with that of the postverbal LPs (in accusative sentences such as (56)) when a negation marker is present in the [SPEC,VP]. The extraction process that will be examined in this particular occasion is topicalization, an A'-movement. It is found that the topicalization of duration expressions will be blocked by the VP-specifier whereas that of the LP will not. Based on the Rizzi's theory, we can infer that postverbal "hai" LPs in Cantonese are arguments bearing a referential θ-role(in Rizzi's sense). Since in the D-structure, the LPs in the Locative Inversion sentences have been shown to be the same type of entity as those in (56)(see Part 1,Section IV for discussion), they are no doubt arguments too. For this reason, in Locative Inversion sentences like (1-10), the movement of the LP from the postverbal complement position to the subject position ([SPEC of IP]) is an A movement. The theory of Relativized Minimality predicts that such kind of movement will not be blocked by A'-specifiers like the negation marker "m"(not) in the [SPEC,VP]. And indeed this is shown to be the case.

A. The Theory of Relativized Minimality

As Rizzi points out in the forward of his book *Relativized Minimality*, the study of the nature and properties of the locality condition is the central task of much current work in syntactic theory. There are essentially two different approaches in dealing with the issue of locality: the "barrier" approach and the "intervention" approach.

The "barrier" approach argues that certain structural boundaries count as barriers for syntactic processes. Suppose we have a configuration like (63).

(63) .....[$_{\alpha}$ .....[$_{\gamma}$ .....β.....].....].....

α=maximal projection

γ=barrier

The extraction of "β" out of the configuration will make the related sentence ungrammatical becasue two barriers have been crossed and Subjacency is violated. (The Subjacency Condition may simply be defined as "movement must not cross more than one barrier"). (64) is an example of Subjacency violation.

(64) *What$_i$ did [$_{IP}$ [$_{CP}$ that she disliked t_i][$_{VP}$ surprise you]]

The "intervention" approach assumes that a syntactic process cannot apply across an intervening element of a designated kind, which could in principle be involved in the process. The Minimality Condition in Chomsky(1986) serves as a good illustration of this approach. With reference to a configuration like (65), the Condition can be defined as (66).

(65) .....α .....[$_{\gamma}$.....δ .....β .....]..... (Chomsky 1986,p.42)

(66) Minimality Condition (broader definition)
γ is a barrier for β if γ is an immediate projection
of δ, a zero-level category distinct from β. (Sung(1990),p.21)

So in the configuration (65), assuming that "γ' is the immediate projection of "δ", "α" will fail to govern "β" even in principle it could do so. To illustrate the Condition, we give the following example.

(67) *Who$_i$ does John think [$_{CP}$ t'_i [$_{C'}$ that [$_{IP}$ t_i can read]]]

"t'_i " fails to govern "t_i " because of the intervening complementizer "that", which is the head of CP and whose immediate projection is C'--a barrier, thus an ECP violation results.

Rizzi's theory of Relativized Minimality intends to "maximize the role of intervention and correspondingly reduce the role of barriers in the definition of government". For this purpose, "barriers" are no longer the most crucial factor in determining government relations. The Minimality Condition of (66) is also excluded in Rizzi's theoretical account. The principle of Relativized Minimality is in essence employed to block "govenrment of some kind across an element which could bear a government relation of the same kind"(Rizzi(1990), Forward).

In Rizzi's analysis, the θ-government requirement of "proper government" in *Barriers* is dispensed and the ECP is reduced to (68).

(68) ECP: A nonpronominal empty category must be properly head-governed. (Rizzi, p. 89)

Head government is in turn defined as

(69) Head Government: X head-governs Y iff
(i) X ∈ {A,N,P,V,Agr,T}
(ii) X m-commands Y
(iii) no barrier intervenes
(iv) Relativized Minimality is respected. (Rizzi, p.6)

Furthermore, "properly-governed" means "governed by X° within X'" (Rizzi,p. 31).

In addition, to explain the difference between an object and an adjunct in the effects they generate when moving across a wh-island, Rizzi proposes two ways to connect an operator (a wh-phrase or a topicalized element) and its variable(trace): binding and a chain of government relations.

(70) "Binding requires identity of referential indices, a formal property now restricted by [the following principle: A referential index must be licensed by a referential θ-role(Rizzi,p.86)]. When co-indexation and binding are not available, the chain of government relations is the only connecting device. But the government relations are intrinsically local." (Rizzi, p.92)

Let us elaborate some of the basic concepts mentioned in (70). Referential θ-roles are argumental θ-roles and they include "agent, theme, patient, experiencer, goal, etc"(Rizzi,p.86). There are also quasi-argumental or non-referential θ-roles and they include "manner, measure, atmospheric-role and idiosyncratic role in idioms, etc."(Rizzi,p.86). An object or an object wh-phrase is an element that is assigned a referential θ-role which licences a referential index. So it can form a binding relation with its trace when it moves, and the binding dependency needs only satisfy head government(see the definition in (69)). In sum, a binding relation is defined as

(71) X binds Y iff
 (i) X c-commands Y
 (ii) X and Y have the same referential index. (Rizzi,p.87)

An example of binding relation is given in (72).

(72) ??Who$_i$ do you wonder [why [John invited t_i]]

As regards the chain of government relations, the ideas of "chain" and "antecedent-government" are most crucial. Rizzi(1990) defines a chain as

(73) (a_1 ,....,a_n) is a chain only if, for $1 \leq i < n$,
 a_i antecedent-governs a_{i+1} (p.92)

Antecedent-government is in turn defined as

(74) X antecedent-governs Y iff
 (i) X and Y are non-distinct
 (ii) X c-commands Y and
 (iii) no barrier intervenes
 (iv) Relativized Minimality is respected. (p.92)

Since an adjunct or an adjunct wh-phrase will not be assigned a referential θ-role, and hence not a referential index, it cannot form a binding dependency. It must therefore form a chain with its trace when it moves, because (antecedent-)government is the only connecting device left. An example of (antecedent-) government relations is shown below.

(75) How$_i$ do [you think [t'_i [John will propose to Mary t_i]]]

In (75), "t'_i " antecedent-governs "t_i " and "how$_i$ " in turn antecedent-governs "t'_i ".

From definitions (69) and (74), we see that both head-government and antecedent-government are constrained by the clause of Relativized Minimality and it is defined as

(76) Relativized Minimality

X α-governs Y only if there is no Z such that

(i) Z is a typical potential α-governor for Y,

(ii) Z c-commands Y and does not c-command X. (Rizzi,p.7)

The variable notion of α-government ranges over head-government and three different cases of antecedent-government(A-antecedent government, A'-antecedent government and X° -antecedent government). So the intuitive idea behind Relativized Minimality is that a paricular kind of government is blocked by the intervention of an element which typically has the potential for government of that kind. The four subcases of typical potential governors are

a. Z is a typical potential head governor for Y=Z is a head m-commanding Y.

b. Z is a typical potential antecedent governor for Y, Y in an A-chain=
Z is an A specifier c-commanding Y.

c. Z is a typical potential antecedent governor for Y, Y in an A'-chain=
Z is an A' specifier c-commanding Y.

d. Z is a typical potential antecedent governor for Y, Y in an X °-chain=
Z is a head c-commanding Y. (Rizzi, p.7)

These four cases generalize the idea that "typical potential governors of different kinds create impermeable domains for government"(p. 8).

According to Rizzi, the Relativized Minimality constraint accounts for not only wh-island violations with adjuncts but also violations with adjuncts in the case of inner and pseudo-opacity islands. These two islands are created by a negation and a floating quantifier respectively when they occupy the [SPEC,VP] position. In contrast to their effects on adjuncts, all the three kinds of islands mentioned here (which can be subsumed under the name of "wh-islands") do not produce a violation with arguments.

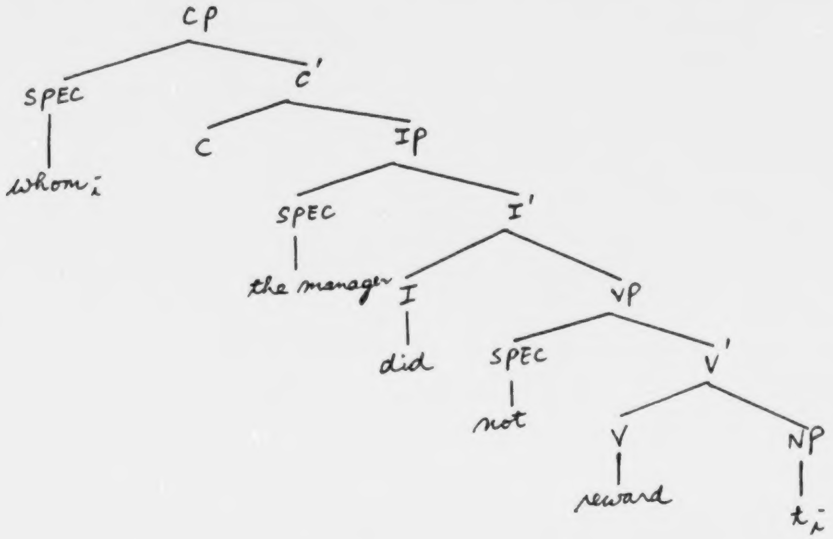
I will illustrate the working of Relativized Minimality by looking at how inner islands affect the extraction of arguments and adjuncts, since we will study similar problems in Cantonese later on. As can be seen, the movement of the two wh-phrases in (77) and (78) respectively generate two different results.

(77) Whom$_i$ didn't the manager reward t$_i$

(78) *How$_i$ didn't the manager reward the players t$_i$

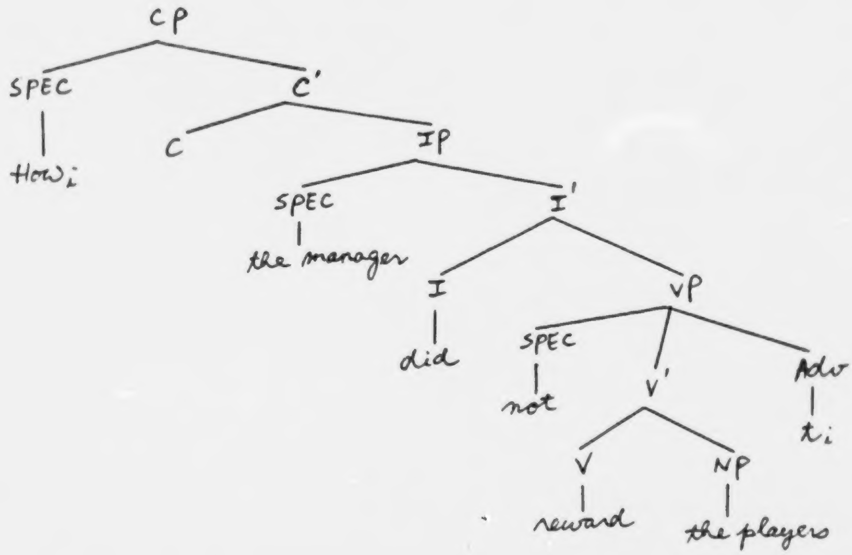
The relation between "whom$_i$ " and "t$_i$ " in (77) is a binding one since the "wh-phrase" is assigned a referential θ-role which licences a referential index. What this dependency needs to fulfil is only head-government and the trace is indeed properly head-governed by the verb as witnessed in (79). (V c-commands t_i , there is no barrier intervening and Relativized Minimality is respected.)

(79)


CP
SPEC
C'
whom$_i$
C
IP
SPEC
I'
the manager
I
VP
did
SPEC
V'
not
V
NP
reward
t_i

On the other hand, the relation between the adjunct and the trace in (78) cannot be "binding" since "how$_i$ " is not assigned a referential θ-role and hence not a referential index. In this case, "how$_i$ " and "t_i " can only be connected by a chain which must fulfill the condition of antecedent- government as defined in (74). Rizzi proposes that the negation in English is a spec of VP(an A'-specifier). So the structural representation of (78) is (80).

(80) *


CP
SPEC
C'
How$_i$
C
IP
SPEC
I'
the manager
I
VP
did
SPEC
V'
Adv
not
t_i
V
NP
reward
the players

The movement of "how_i " to the [SPEC, CP] is ruled out by Relativized Minimality because "how_i " cannot antecedent-govern the trace due to the intervention of the A'-specifier "not" in the [SPEC, VP]. To generalize, Relativized Minimality predicts that the extraction of an argument across an wh-island is well-formed but that of an adjunct is ill-formed.

With an understanding of how Relativized Minimality works, I will go on to give further justification to the hypothesis that the sentence-initial LPs of the Locative Inversion Sentences(1-10) are postverbal complements (arguments) in the D-structure.

B. The LPs as Arguments

The negation marker "m"(not) in Cantonese can either precede or follow an auxiliary verb like "ho yi"(can/may), "ying goi"(should) or "wui"(will), as illustrated in (81).

(81)a.	keui	m	ho yi	maai	ni di	saam	(aa)
	he	not	can	buy	these	clothes	PART

"He is not allowed to buy these clothes."

b.	keui	ho yi	m	maai	ni di	saam	(aa)
	he	can	not	buy	these	clothes	PART

"It is not necessary for him to buy these clothes."

We can safely assume that "m"(not) in (81a) is an I'-adjunct since it precedes the auxiliary verb. The topicalization of the VP in (81a) is always grammatical as shown in (82); and the movement will not involve the negation marker since it is I'-adjoined.

(82)	maai	ni di	saam	(aa),	keui	m	ho yi
	buy	these	clothes	PART	he	not	can

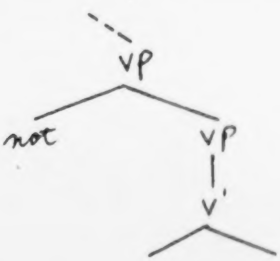
The "m"(not) in (81b), however, must be a constituent of VP and this can be demonstrated by the contrast between (83a) and (83b).

(83)a.	*maai	ni di	saam	(aa),	keui	ho yi	m
	buy	these	clothes	PART	he	can	not
b.	m	maai	ni di	saam	(aa),	keui	ho yi
	not	buy	these	clothes	PART	he	can

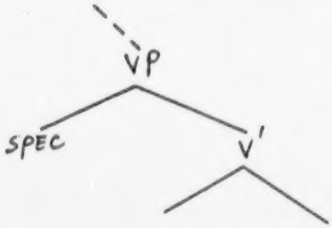
Sentence (83a) is the result of topicalizing the VP in (81b) without moving the negation marker with it and it is ungrammatical. But the topicalization of the VP together with the negation marker will produce a grammatical sentence like (83b).

As a constituent of VP and as an element preceding the verb, the negation marker in (81b) can occupy two different positions in principle, either VP adjunction or [SPEC, VP]. The two positions are shown in (84).

(84)a.



b.



Nevertheless, the second alternative should be opted for because of two pieces of evidence. First, Rizzi suggests that "pas/not" in French and English are specifiers owing to the fact that they can function as specifiers of other projections, namely, QP's and AP's.

(85) QP's: pas beaucoup; pas tout
=not much; not all
AP's: pas capable de faire
=not capable of doing (Rizzi, p. 17)

The same analysis can be applied to the negation marker "m"(not) in Cantonese. We can say

(86)
m
not
{ do
much/many
siu
little/few
leng
beautiful
gwai
expansive }

Second, the negation marker may have the same distribution as some typical specifiers like "hou"(very), "goum"(so), "taai"(too) and "gei"(quite). They can modify cognition verbs as well as stative verbs. The following are two examples.

(87)a.		m	seung		
		not	want		
	Mary	goum	paa	heui	Singapore
		so	fear	go	
		taai	hei mong		
		too	hope		
		gei	yun yi		
		quite	would like		

b.		m	gou
		not	tall
	Max	goum	lek
		so	capable
		taai	ngo
		too	hungry
		gei	ngok
		quite	unfriendly

We therefore conclude that the negation marker in VP is located at the [SPEC, VP]. We can now move on to compare the extraction behaviour of the adjunct-like duration expressions with that of the postverbal "hai"(at/in/on/from) LPs when there is a VP specifier "m"(not) existing in the sentence.

Adjunct expressions like "leung go jung tau"(two hours) and "saam yat"(three days) can be topicalized if they appear in sentences like (88) where the negation marker is in the I'-adjunction position. The negation marker in this context will not trigger Relativized Minimality because it is not a specifier.

(88)a.	keui	(dou)	m	ho yi	dang	leung	go	jung tau
	he	also	not	can/may	wait	two	CL	hour

"He (also) can/may not wait for two hours."

b.	leung	go	jung tau,	keui	(dou)	m	ho yi	dang
	two	CL	hour	he	also	not	can/may	wait

(The presence of "dou"(also) will make the sentence more natural.)

But if the negation marker is in the [SPEC, VP] position, the topicalization of the duration expressions will result in an ungrammatical sentence whether "dou"(also) is present or not.

(89)a.	keui	(dou)	ho yi	m	dang	leung	go	jung tau
	he	also	can/may	not	wait	two	CL	hour

"It is not necessary for him to wait for two hours."

b.	*leung	go	jung tau,	keui	(dou)	ho yi	m	dang
	two	CL	hour	he	also	can/may	not	wait

The ill-formedness of (89b) is predicted by the principle of Relativized Minimality since the topicalization of the duration expressions (which is an A'-movement) is blocked by a potential antecedent governor--the negation marker "m"(not) in the [SPEC, VP](for which I have given proofs above).

On the other hand, the topicalization of the postverbal "hai"(at/in/on/from) LPs in accusative sentences containing verbs like "gwaa"(hang), "lim"(paste) and "jong"(install) is legitimate whether the negation marker is in the I'-adjunction or [SPEC, VP] position.

(90)a.	Ah Wong	(m)	ho yi	(m)	gwaa	waa	hai	cheung	seung min
		not	can/may	not	hang	picture	at	wall	top/on

"Ah Wong is not allowed
It is not necessary for Ah Wong } to hang pictures on the wall."

b.	hai	cheung	seung min,	Ah Wong	(m)	ho yi	(m)
	at	wall	top/on		not	can/may	not
	gwaa	waa	*(hai dou)				
	hang	picture	there				

The acceptability of (90b) suggests that the LP must be an argument receiving a referential θ-role from the verb and thus assigned a referential index. The LP after topicalization is coindexed with the proform "hai dou"(there) and they can form a binding dependency rather than a government chain. Consequently, the principle of Relativized Minimality has no effect on the movement because it constraints head-government and antecedent-government only, but not a binding relation.

We have argued in Part 1 that sentence-initial LPs of the Locative Inversion sentences originate in the postverbal position in the D-structure. At this level, they occupy the same position and receive the same type of θ-role as the LP in (90a) (see discussion in Part 1, Section IV). Therefore, they must also be arguments (complements) too. The legitimacy of their movement to the subject [SPEC, IP] position(see the discussion in Part 1 for the hypothesis of movement) is likewise predicted by the theory of Relativized Minimality even though an A'-specifier negation marker intervenes as in the case of (91).

(91)	(hai)	cheung	seung min	ho yi	m	gwaa	waa	(hai dou)
	at	wall	top/on	can/may	not	hang	picture	there

"It is not necessary to hang pictures on the wall."

Since locative inversion is an A-movement (from an argument position to another argument position), an A'-specifier will never interfere with antecedent government in an A-chain because it is only a potential governor in an A'- chain.

II. Further Justification for the Subjecthood of the Sentence-initial LPs in Locative Inversion Sentences

In this section, I will give further justification to the subjecthood of the LPs in Locative Inversion sentences by looking at the phenomenon of SuperRaising in Cantonese. I will first show what SuperRaising is like in Cantonese. After this preliminary set-up, I will go on to argue that sentence-initial LPs of the Locative Inversion sentences exhibit characteristics parallel to the subjects of the SuperRaising sentences discussed.

Let's observe the following paradigm.

(92)a.	hou chi	[pro]	waa	di	waa	gwaa	jo	hai	cheung	seung min
	seem	EC	say	those	picture	hang	ASP	at	wall	top/on

"It seems that somebody says that those pictures are hung on the wall."

b.	di	waa$_i$	hou chi	[pro]	waa	t_i	gwaa	jo	hai	cheung	seung min
	those	picture	seem	EC	say		hang	ASP	at	wall	top/on

c.	*hou chi	di	waa$_i$	waa	t_i	gwaa	jo	hai	cheung	seung min
	seem	those	picture	say		hang	ASP	at	wall	top/on

(93)a.	hou chi	[pro]	waa	gaa	che	bei	yan	tau	jo
	seem	EC	say	CL	car	PM	people	steal	ASP

"It seems that somebody says that the car has been stolen."

b.	gaa	che$_i$	hou chi	[pro]	waa	t_i	bei	yan	tau	jo
	CL	car	seem	EC	say		PM	people	steal	ASP

c.	*hou chi	gaa	che$_i$	waa	t_i	bei	yan	tau	jo
	seem	CL	car	say		PM	people	steal	ASP

As "hou chi"(seem) is assumed to be a raising predicate,[10] we can hypothesize that the subjects of the embedded clause in (92a) and (93a) have been raised to the sentence-initial position forming (92b) and (93b). As regards (92c), its ungrammaticality is obvious. The word "waa"(say) requires an agentive external argument, whereas "di waa"(those pictures) is a theme. ("Di waa"(those pictures) occurs underlyingly in the object position since "gwaa"(hang) in this case is an unaccusative verb--see Part 1, section IV for discussion.) From (93b), we can also infer that the subject of a passive subordinate clause can also be SuperRaised. Again, (93c) is ill-formed since "gaa che"(the car) bears a patient role and cannot serve as the agentive external argument of the verb "waa"(say).

The sentence-intial NPs in the SuperRaising sentences (92b) and (93b) are definitely subjects rather than topics because sentence adjuncts like "tsan maa faan"(very troublesome) and "hou m hou choi"(unfortunately), which we have used to distinguish subjects from topics in Part 1, can be placed immediately before them. (But topics behave otherwise.) (94a) and (94b) illustrate this point.

(94)a.	tsan maa faan	di	waa$_i$	hou chi	[pro]	waa	t_i	gwaa
	very troublsome	those	picture	seem	EC	say		hang
	jo	hai	cheung	seung min				
	ASP	at	wall	top/on				

"It is troublesome that it seems that somebody says that those pictures are hung on the wall."

b.	hou m hou choi	gaa	che$_i$	hou chi	[pro]	waa	t_i
	unfortunately	CL	car	seem	EC	say	
	bei	yan	tau	jo			
	PM	people	steal	ASP			

"Unfortunately, it seems that somebody says that the car has been stolen."

The sentence-initial LPs of Locative Inversion sentences behave exactly the same as those subjects in (92a) and (93a) with respect to SuperRaising. Sentences in (95), which contain sentence-initial LPs, have the same pattern as those in (92) and (93).

(95)a.	hou chi	[pro]	waa	(hai)	cheung	seung min
	seem	EC	say	at	wall	top/on
	gwaa	jo	fuk	waa	(hai dou)	
	hang	ASP	CL	picture	there	

"It seems that somebody says that there is a picture hanging on the wall."

b.	(hai)	cheung	seung min$_i$	hou chi	[pro]	waa	t_i
	at	wall	top/on	seem	EC	say	
	gwaa	jo	fuk	waa	(hai dou)		
	hang	ASP	CL	picture	there		

c.	*hou chi	(hai)	cheung	seung min$_i$	waa	t_i
	seem	at	wall	top/on	say	
	gwaa	jo	fuk	waa	(hai dou)	
	hang	ASP	CL	picture	there	

Furthermore, the sentence adjunct "tsan maa faan"(very troublesome) can likewise be placed immediately before the LP in (95b) and this evidence supports the conclusion that the LP is a subject, not a topic.

(96)	tsan maa faan	(hai)	cheung	seung min$_i$	hou chi	[pro]	waa	t_i
	very troublesome	at	wall	top/on	seem	EC	say	
	gwaa	jo	fuk	waa	(hai dou)			
	hang	ASP	CL	picture	there			

When the "pro" in each of the sentences (92b), (93b) and (95b) is replaced by a lexical subject as shown in (97), the grammatical function of the initial phrases in all these (b) sentences changes as well. The sentence-initial phrases in (97a) and (97c)("di waa"(those pictures) and "hai cheung seung min"(on the wall)) can only be interpreted as topics as witnessed from the fact that the sentence adjunct "tsan maa faan"(very troublesome) cannot be put immediately before them. Furthermore, (97b) can hardly be interpreted because it is simply ungrammatical.

(97)a.	(*tsan maa faan)	?di	waa$_i$	hou chi	Ah Chan	waa	t_i	gwaa
	very troublesome	those	picture	seem		say		hang
	jo	hai	cheung	seung min				
	ASP	at	wall	top/on				

b.	*gaa	che$_i$	hou chi	Ah Chan	waa	t_i	bei	yan	tau	jo
	CL	car	seem		say		PM	people	steal	ASP

c.	(*tsan maa faan)	?(hai)	cheung	seung min$_i$	hou chi	Ah Chan	waa
	very troublesome	at	wall	top/on	seem		say
	t_i	gwaa	jo	fuk	waa	(hai dou)	
		hang	ASP	CL	picture	there	

To summarize, three points of interests stand out from the analysis in this section.

(i) The sentence-initial LPs of the Locative Inversion sentences(1-10) are undoubtedly subjects and they can participate in SuperRaising, as shown in (95b).

(ii) In Cantonese SuperRaising(an A-movement), extracting a subject across another lexical subject, which is an A-specifier and which is a potential antecedent governor, is prohibited. Such restriction is clearly shown in (97). The reason why (97a) and (97c) are felicitous is that the sentence-initial phrases ("di waa"(those pictures) and "hai cheung seung min"(on the wall)) are topics. The movement process cannot be interpreted as SuperRaising--an A movement, and it can only be topicalization--an A'-movement. The lexical subject "Ah Wong" or "Ah Chan", which is an A-specifier, will not intervene in an A'-movement. Hence, the principle of Relativized Minimality makes the right prediction in these cases.

(iii) However, the fact that SuperRaising is allowed in (92b), (93b) and (95b) suggests that "pro" in Chinese, although an A-specifier, will not intervene in an A-chain and block the movement , unlike what is predicted by the principle of Relativized Minimality.

III. Extension of the Locative Inversion Analysis to Existential "Yau"(have) Sentences

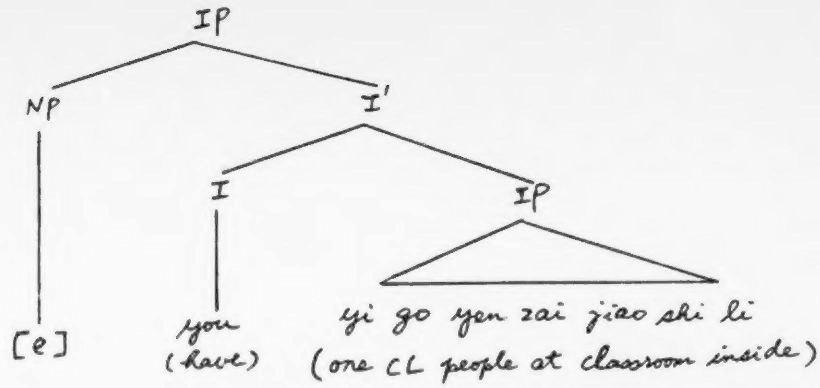
The proposal that the sentence-initial LPs of the Locative Inversion sentences in (1-10) results from a movement operation can be carried over to the existential "yau"(have) sentences beginning with a LP. The locative inversion of the "yau"(have) sentences, however, is not limited to extracting LPs from the postverbal complement position. Preverbal adjunct LPs can also be moved to the sentence-initial (subject) position. In both cases, the pro-form "hai dou"(there) may coexist with the LPs, thus bearing witness to the operation of the movement process. The subjecthood of the sentence-initial LPs can be ascertained by the fact that they pass all the tests for subjects which have been employed in the earlier analysis. The movement analysis in the existential "yau"(have) sentences is comparable to Freeze's(1991) crosslinguistic analysis of "have" structures as locative sentences. But it differs widely from Huang's(1989) analysis of the existential "you"(have) sentences in Mandarin as far as the sentence-initial LPs are concerned.

Huang(1989) proposes that in Mandarin, an existential "you"(have) sentence like (98a) can be analyzed with a structure shown in (98b).

(98)a.	you	yi	go	yan	zai	jiao shi	li
	have	one	CL	people	at	classroom	inside

"There is a man inside the classroom."

b.


IP
NP
I'
I
IP
[e]
you
(have)
yi go yen zai jiao shi li
(one CL people at classroom inside)

The crucial assumption in this case is that "you"(have) in (98) is an auxiliary verb in contrast to the full-verb "you"(have) in the possessive sentences. If the subject of the lower IP is indefinite, like "yi go yan"(a person), it will not be raised to the subject position of the matrix IP which is left empty in the surface form. However, if the subject of the lower IP is definite, it will be obligatorily raised to the empty subject position. But according to Huang(1989), it is not possible for a definite NP to follow immediately the existential "you"(have). So raising will not occur in the existential "you"(have) sentences such as (98). It can only happen in sentences having "you" as a perfective auxiliary verb like (99).

(99) Zhangsan$_i$ mei you t_i kan jian Lisi
not have see

"Zhangsan did not/has not see/seen Lisi."

One of Huang's(1989) major arguments for treating existential "you"(have) in Mandarin as an auxiliary verb is that, similar to other canonical auxiliary verbs like "hui"(will) and "ying gai"(should), existential "you"(have) cannot take an aspect marker. This is also true for the existential "yau"(have) in Cantonese as seen from (100).

(100) yau {*jo ASP / *gwo ASP} fuk waa gwaa jo hai cheung seung min
have CL picture hang ASP at wall top/on

"There is a picture hanging on the wall."

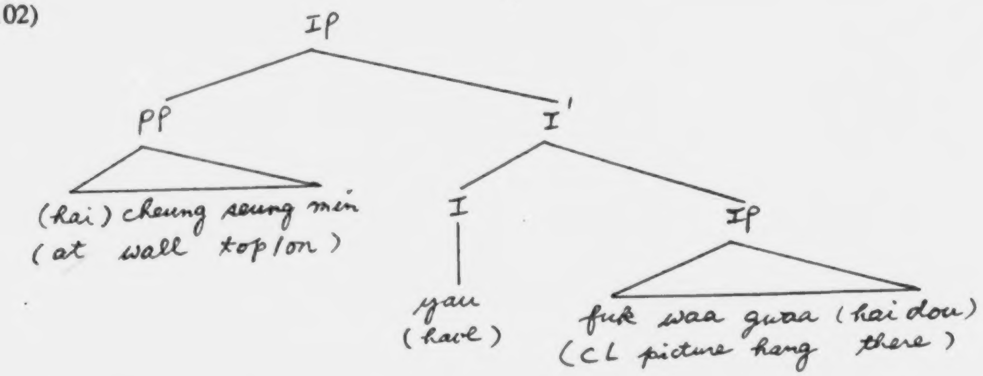
So I also assume that (100) has an underlying structure similar to (98b).

This kind of sentences in Cantonese also allows LPs to appear in the sentence-initial position. (101) is a counterpart of (100) and they both have the same truth-value in meaning.

(101)	(hai)	cheung	seung min	yau	fuk	waa	gwaa	*(hai dou)
	at	wall	top/on	have	CL	picture	hang	there

The noticeable thing in (101) is that the proform "hai dou"(there) may also co-exist with the sentence-initial LP(see discussion in section IV (B),Part 1). Therefore, we can once more hypothesize that the LP in (101) comes from the postverbal complement position via movement. The structural representation in (102) illustrates the movement process.

(102)



There are in fact several arguments in favour of this hypothesis. First, Huang(1989) argues that existential "you"(have) in Mandarin subcategorizes for an internal argument which appears as a complement in the D-structure. I assume that this proposal can be carried over to the Cantonese case. This semantic classification of "yau"(have) makes it equivalent to unaccusative verbs like "fan"(lie), "kei"(stand) and "cho"(sit) which allow locative inversion as shown in (1-10). (Unaccusative verbs also subcategorize for internal arguments only.) The movement hypothesis for existential sentences like (102) is congruent to what this paper has been proposing all along.

Second, the sentence-initial LP in (101) can pass all the subjecthood tests that have been invoked in Part 1. For ease of presentation, we only show the "sentence-adjunct-placement" and the "subject-raising" tests in the following.

(103)a.	hou ho neng	(hai)	cheung	seung min	yau	fuk	waa
	probably	at	wall	top/on	have	CL	picture
	gua	*(hai dou)					
	hang	there					

"Probably, there is a picture hanging on the wall."

b.	(hai)	cheung	seung min	hou chi	yau	fuk	waa
	at	wall	top/on	seem	have	CL	picture
	gwaa	*(hai dou)					
	hang	there					

"It seems that there is a picture hanging on the wall."

(101) can also participate in SuperRaising.

(104)	(hai)	cheung	seung min	hou chi	[pro]	waa	t
	at	wall	top/on	seem	EC	say	
	yau	fuk	waa	gwaa	*(hai dou)		
	have	CL	picture	hang	there		

"It seems that somebody says that there is a picture hanging on the wall."

(Notice that "hai dou"(there) in (103) and (104) are obligatory.)

So the locative inversion analysis can capture the similarities between the locative existential sentences (as in (101)) and the typical Locative Inversion sentences (as in (1-10)).

There are two more extensions of the movement analysis that I should mention. One is the possibility of moving an adjunct LP to the subject [SPEC, IP] position in an existential sentence. (105a) has a counterpart (105b).

(105)a.	yau	yan	(hai	uk	leui min)	tiu mou
	have	people	at	house	inside	dance

"There are people dancing inside the house."

b.	(hai)	uk	leui min	yau	yan	(hai dou)	tiu mou
	at	house	inside	have	people	there	dance

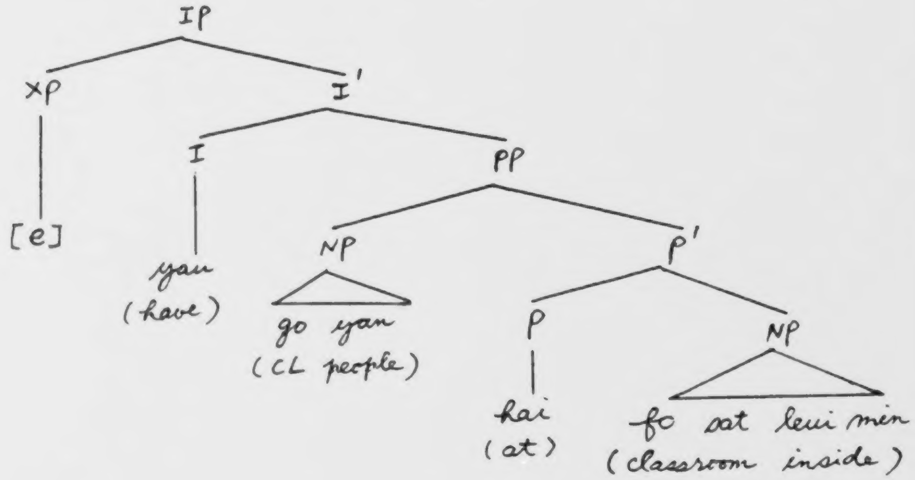
The LP in (105a) is an adjunct basically because of its optional nature. But it can still be moved to the sentence-initial (subject) position as what appears in (105b). The initial LP in this case is a subject since it can pass all the subjecthood tests mentioned before. Thus I conclude that locative inversion in Cantonese can also be an A'-movement(moving an XP from an A' position to an A position).

The other extension that deserves attention is the possibility of moving a PP predicate in locative inversion. Sentence (106a) has an underlying structure like (106b).

(106)a.	yau	go	yan	hai	fo sat	leui min
	have	CL	people	at	classroom	inside

"There is a man inside the classroom."

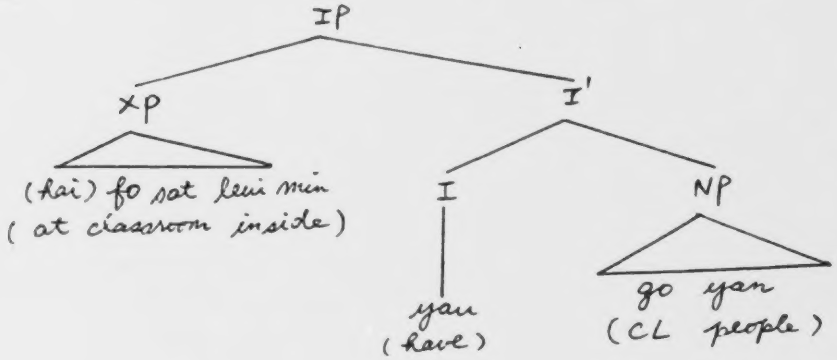
b.


IP
XP
I'
[e]
I
PP
yau
(have)
NP
P'
go yan
(CL people)
P
NP
hai
(at)
fo sat leui min
(classroom inside)

The whole PP can be raised to the subject position becoming (107).

(107)a.	(hai)	fo sat	leui min	yau	go	yan	(hai dou)
	at	classroom	inside	have	CL	man	there

b.


IP
XP
I'
(hai) fo sat leui min
(at classroom inside)
I
NP
yau
(have)
go yan
(CL people)

Again, the sentence-initial LP in (107) can pass all the subjecthood tests mentioned in Part 1.

This analysis is similar to what Freeze(1991) proposes for treating crosslinguistic "have"-structures like (108) as locative sentences.

(108) a. English

I have a needle (on me). (Freeze, p.53)

b. Russian

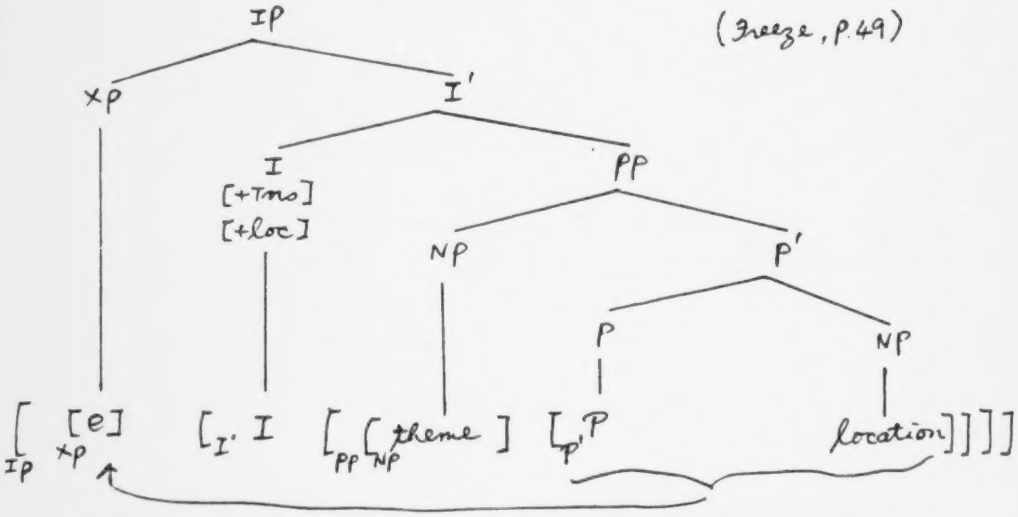
u menja est sestra
at I-GEN COP sister-NOM
[+Loc]
"I have a sister." (Freeze's (55b), p.46)

c. Finnish

poyda-lla on kyna
table-on COP pencil
[+Loc]
"There is a pencil on the table." (Freeze's (56a),p.46)

The "have" subjects in (108) are all regarded by Freeze as locations and the sentences all have a similar underlying representation like (109) which is comparable to (106b).

(109)


(Freeze, p.49)

In this case, the locative argument "P'" is moved to the subject position in S-structure, leaving its specifier, i.e. NP, in situ.

Although the proposal here fits in with Freeze's crosslinguistic analysis, it differs widely from what Huang(1989) proposes for similar sentences in Mandarin.

Huang(1989) suggests that Mandarin sentences like (110) should belong to the possessive type instead of the existential type.

(110)	jiao shi	li	you	(zhou)	yi	ban	shu	ma?
	classroom	inside	have	ASP	one	CL	book	PART
					zhe			
					this			

"Is there {a / *this} book inside the classroom?"

Even though this suggestion seems odd because of the possessive relation(that in (110), "the classroom owns a book"), he nevertheless supports his argument by saying that the "you"(have) in this case is a full-verb(rather than an auxiliary verb as in the existential sentences) because it can take an apsect marker. By asserting that (110) belongs to the possessive type, he can also explain why a definite NP("zhe yi ban shu"(this book)) can appear after "you"(have), which is prohibited in existential sentences. Huang(1987,1989) also insists that sentence-initial LPs like the one in (110) are base-generated NP. However, the analysis in this section suggests a very different treatment of the subject LPs of the "yau"(have) sentences in Cantonese. I hypothesize that they are not base-generated but they come from either the postverbal complement position or the adjunct position. This movement analysis is only a subset of the general process Locative Inversion that operates extensively in Cantonese.

IV. Summary and Conclusion

The first part of the paper has showed that Locative Inversion sentences like (1-10) are derived by a movement process. The LPs of these sentences are claimed to originate in the postverbal complement position in the D-structure, but move to the subject position in S-structure. I begin the discussion by adducing several pieces of evidence to support the subjecthood of the LPs in the surface form. First, they exhibit at least three major characteristics that differentiate them from ordinary topics. Second, they assume a position in the surface structure that precedes the auxiliary verbs and sentence adverbials. Third, they can undergo subject-to-subject raising. The next task I do is to justify the proposal that the LPs in (1-10) move from the postverbal complement position to the subject position. I first show that the verbs in the Locative Inversion sentences in (1-10) are unaccusative in nature. Second, I demonstrate the relative distribution and cooccurrence restrictions between the sentence-initial LPs and their coreferent proform "hai dou"(there). Their distribution properties justify the claim that the sentence-initial LPs are a result of the movement operation and the proform "hai dou"(there), which is optional, is some kind of residue coreferent to the LPs. The argument that the LPs appear as postverbal complements in the D-structure is reinforced by the fact that when they appear in the postverbal position in the surface form, they are obligatory and receive a locative θ-role from the verb. The third task I attempt is to show that some Locative Inversion sentences like (2,7,& 8), which contain verbs like "gwaa"(hang), "lim" (paste) and "se"(write), can acquire an accusative reading in other contexts. This is particularly obvious if these sentences appear as part of a discourse and the agents are omitted to avoid repetition since they are mentioned previously . In this case, these accusative sentences in D-structure will contain a "pro" under the [SPEC, IP]. The fourth task I tackle is to contrast the θ-role assignment and Case-assignment of Cantonese with those of Mandarin. I also justify that PPs in Cantonese, such as sentence-initial LPs, can receive Case.

The second part of the paper is designed to tackle three tasks. At the outset, I strengthen the proposal that the sentence-initial LPs in (1) and (2) are also arguments(complements) when they are in D-structure. The strategy I use is to first compare the extraction behaviour between the postverbal LPs in accusative sentences(like(56)) and the adjunct-like duration expressions. From their difference in extraction behaviour and based on Rizzi's theory of Relativized Minimality, I can reaffirm that postverbal LPs must be arguments(complements). Since I have already argued that these LPs of the accusative sentences are the same kind of entity as those LPs of the Locative Inversion sentences in D-structure, the latter must also be arguments too. The next task I deal with is to reinforce the subjecthood of the sentence-initial LPs by claiming that they also participate in SuperRaising. One significant observation is that the raising of the LPs across another lexical subject is blocked, but the raising of the LPs across a "pro" is allowed. The third task I undertake is to extend the movement analysis in Part 1 to the type of existential "yau"(have) sentences in Cantonese that begin with a LP. These sentences are also claimed to have undergone locative inversion and the sentence-initial LPs may come from the postverbal complement position or the preverbal adjunct position.

As a whole, the investigation in this paper has come up with the following generalizations:

(i) The Locative Inversion phenomenon in Cantonese is widespread and movement is involved to front the LPs to the subject(sentence-initial) position. In the majority of cases, the LPs are extracted from the postverbal complement position. But it is also possible to front a preverbal adjunct LP in an existential "yau"(have) sentence.

(ii) Since the LPs are PPs and they are moved into the [SPEC, IP] position in locative inversion, this suggests that Cantonese PPs can be assigned Case in this particular context.

(iii) Because of the proposal of movement analysis in Locative Inversion, I have argued that Cantonese word order is SVO at both D- and S-structure.

(iv) In examining the SuperRaising characteristics of the sentence-initial LPs in Locative Inversion sentences, I come to the conclusion that "pro"(an A-specifier) in Cantonese will not intervene in an A-chain and block the related movement, unlike what is predicted by the theory of Relativized Minimality.

For further research, it will be interesting to look into the relation between locative inversion and syntactic processes like passivization and relativization. The study in this paper also shows that it may be a fruitful task to further investigate the issue of treating the negation marker "m"(not) in Cantonese as a spec of VP. In analyzing the SuperRaising phenomenon of the Locative Inversion sentences, I find that in Cantonese, it is possible to extract an element across "pro"(an A-specifier at the [SPEC, IP]) in an A-movement. This looks like a counterexample to the theory of Relativized Minimality. Further research into other kinds of A-movement, like passivization, may help to reconfirm this preliminary generalization.

NOTES

*I would like to thank Professor S.Y. Kuroda for reminding me to work on my native language Cantonese, as well as his guidance and challenges. His suggestions directly inspired some of the ideas in this paper. I am grateful to Professor Matthew Chen for his careful reading of an earlier draft of this paper and his critical comments. I also thank Dr. Robert Kluender for agreeing to be a reader of this paper and his comments. I appreciate Raul Aranovich's enthusiasm in discussing the theory of Relativized Minimality with me. I am indebted to the anonymous reviewer for pointing out the problem in one of my arguments in the earlier draft. I am also indebted to my wife, Anita Hung, and my friends at San Diego for testing the data in this paper.

1. By "logical subject", I refer to the thematic argument of a verb that can be a surface subject in the unmarked case. The following sentence

yau go yan fan hai chong seung min
have CL people lie at bed top/on
"There is a man lying on the bed."

is considered as an unmarked case, where the "logical subject" is "go yan"(a man). Example (1) on page 1 is the marked counterpart of the sentence above and the "logical subject" stays in the postverbal position after locative inversion.

2. The transliteration of the Cantonese words(characters) in this paper is based on the Yale system, but tones are not shown. The following is a list of the transliteration symbols and their IPA equivalents(in brackets).

b(p) d(t) g(k) p(p') t(t') k(k') l(l) m(m) n(n) ng(n) f(f)
h(h) s(s) j(ts) ch(ts') gw(kw) kw(k'w) w(w) y(j)
a(a) ai(ai) au(au) aa(a:) aai(a:i) aau(a:u) e(ɛ) ei(ei) eu(œ)
i(i) iu(iu) o(ɔ:) ou(ou) oi(ɔi) u(u) ui(ui) eui(œy) yu(y)

3. Abbreviations

ASP=aspect marker CL=classifier EC=empty category DEM=demonstrative determiner
MOD=modifier PART=particle PM=passive marker POSS=possessive marker

4. I assume that the verb "lei mai"(hide) has two readings, both unaccusative and unergative. In sentence (6), it is an unaccusative verb and it takes an argument that bears the theme/patient role and which occupies the object position in the D-structure. On the other hand, if it occurs as unergative, then it will take an argument that bears an agent role and occupies the subject position in the D- and S-structure.

5. Thanks go to Phil Lesourd for suggesting to me the use of the term "sentence adjuncts".

6. I am indebted to Prof. S.Y. Kuroda for this idea.

7. Throughout this paper, I will assume that "hou chi"(likely/seem) and "hou ho neng"(possibly) are raising predicates in Cantonese. This assumption is based on the fact that these expressions behave similarly to their Mandarin counterparts which are affirmed to be raising predicates by Hou(1977), Li(1990) and Zhou(1990).

8. In the analysis that follows, I will show that the NP "hou do sai lou jai"(many children) occurs in the object position in the D-structure. (39a) is a result of moving the NP to the subject position in the S-structure. In (39b), the LP is moved to the surface subject position instead. That is why I call the NP in this case a potential subject. For the idea of "logical subject", please see note (1) above.

9. The assumption that ergative verbs in Mandarin Chinese can assign Case

to their NP complements deviates materially from Burzio's idea of ergative verbs which are claimed to be unable to assign Case. For evidence supporting the Chinese assumption, the reader is referred to Li(1990) and Zhou(1990).

10. See note (7) above.

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SPATIAL EXPRESSIONS IN SINHALA:
Appearance of Verb Forms

Sunanda Tilakaratne

Abstract: Most of the studies done on locative constructions in many languages show the relationship between the figure and the ground in terms of geometrical and/or topological terms. This paper shows that in Sinhala the locative expressions answer the question not only 'Where is the object X?' but also 'How the figure is oriented in relation to the ground?'. Also it is shown that the verb forms appearing in Sinhala locative expressions, are sensitive to the animate/inanimate distinction.

Introduction

Sinhala (also called Sinhalese) is the language of the majority of Sri Lanka. Sri Lanka is an island in the Indian Ocean 22 miles southeast of India. Sinhala belongs to the Indo European language family. At early stages Sinhala was influenced by Sanskrit and Pali, which belong to the same language family. The earliest influence of Tamil, which is a Dravidian language, has been traced back to the 11th century A. D. Tamil has been

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I would like to express my gratitude to Professor C. Pye for his valuable comments for the improvement of this paper.

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a contact language for many centuries since then. Later, from the16th century to the 20th century there were Portugese, Dutch, and English people in the country. The effect of these languages can be mainly seen in the lexicon. Since Sinhala did not have close contacts with other sister languages such as Hindi, Urdu or Bengali, it has developed many characteristics of its own.

The Goal of the Study

The major goal of this study is to show how the equivalents of English spatial prepositional expressions are constructed in Sinhala and how they differ from spatial expressions in English.

I will first describe how Sinhala expresses spatial relations and secondly compare spatial expressions in English and Sinhala. The structural differences between the two languages reveal interesting facts about language in general. However, this paper deals mainly with structural differences and will not concentrate on the semantic differences between the two languages. Semantic aspects will be discussed only when it is necessary to clarify structural differences.

Various labels have been assigned to the two noun phrases associated with the spatial prepositions. In the present study, I will use the terms spatial entity and the localizer, following Weinsberg (1973) and Ceinki (1989).

An Overview of the Sinhala Grammar and the Spatial Relations

Sinhala grammarians distinguish three types of words. They are the nouns, verbs, and particles. The third category is described as consisting of words which come before, after, and in between nouns and verbs and change the meanings of words. All the words which do not belong to nouns and verbs such as conjunctions, question words, locatives, emphatic words etc. fall into this category. I will examine below which category of lexical items in Sinhala represents the equivalent meanings of prepositions in English.

The major difficulty in finding translation equivalents in Sinhala for English prepositions is that there is no one category of lexical items in Sinhala, which represents the equivalent meanings of prepositions in English. First, I would like to explore some of the difficulties that would arise in finding translation equivalents of English prepositions in Sinhala by briefly looking into the case system in Sinhala, and examining which use types of English prepositions are presented by means of the case system.

Case system in Sinhala: The Sinhala language distinguishes nine cases. They are the nominative, accusative, instrumental, auxiliary, dative, ablative, genitive, locative and vocative cases. Among these, Sinhala uses the ablative and locative cases to mark spatial relations.

Ceinki (1989) defines ablative spatial behavior as indicating the increase of the distance between the spatial entity and the localizer. Cumaratunga (1983) defines the ablative case as "the initial margin of the verb". This is similar to the spatial sense of the English expressions such as 'away from' and 'out of' which indicate the initiation of the distance between the spatial entity and the localizer. The following example shows that Sinhala uses the suffix -ɛn for this purpose.

(1) a. kurulla ku:duwɛn iwət̪ə pijæ:ɓuwe:jə
kurull-a: ku:duw-ə-ɛn iwət̪ə pijæ:ɓuwe:jə
bird+the cage+the+from outof flew
The bird flew out of the cage.

b. kurulla: ku:duwɛn pijæ:ɓuwe:jə
kurull-a: ku:duw-ə-ɛn pijæ:ɓuwe:jə
bird+the cage+the+from flew
The bird flew from the cage.

The locative spatial expressions, are used to show the spatial entity in the place identified by the prepositional place.

(2) a. jane:ləjɛhi sitinə mæssa:
jane:ləj-ə-ɛhi sitinə mæss-a:
window+the+in staying fly+the
the fly on the window

b.

si:limɛhi	sitinə	makuluwa:
si:lim-ə-ɛhi	sitinə	makuluw-a
ceiling+the+in	staying	spider+the

the spider on the ceiling

The Sinhala term for this case 'a:dha:rə' means the 'support' provided by the localizer. The suffixes a, ɛ, ɛhi, hi are the singular noun markers for this case. The following examples of the locative case are taken from Perera (1960).

(3) a.

gasə	mudunɛhi	wɛsɛnə	kurullo
gas-ə	mudun-a-ɛhi	wɛsɛnə	kurull-o:
tree+the	top+the+in	living	birds+the

the birds that live on top of the tree

b.

pa:sælɛhi	(æṯi)	kɛlipitiyə
pa:sæl-ə-ɛhi	(æṯi)	kɛlipitiy-ə
school+the+in	(has)	playground+the

the playground of the school

c.

gamɛhi	(wɛsɛnə)	gæhænu
gam-ə-ɛhi	(wɛsɛnə)	gæhæn-u
village+the+in	(living)	women+the

the women in the village
(inclusion, boundary)

d.

putuwɛhi	sitinə	minisa:
putuw-ə-ɛhi	sitinə	minis-a:
chair+the+in	staying	man+the

the man on the chair.

Structural Differences between the Two Languages

Examples in 3. a-d show, that Sinhala expresses spatial relations using suffixes. Sinhala also uses postpositions to express locative relations of support:

(4) balla: pæḏurə udə siti:.
ball-a: pæḏur-ə udə siti:.
dog+the mat+the on staying.
The dog is on the mat.

The postposition 'udə' in Sinhala expresses an equivalent meaning of English preposition 'on' as shown in the following example.

(5) pæḏurə udə
pæḏur-ə udə
mat+the on
on the mat

The example below illustrates the placement of the localizers, spatial entities and the postpositions in a more complex spatial construction.

(6)
ka:mərəjɛhi æṯi me:səjə udə æṯi mallɛhi æṯi pot̪ə
ka:mərəj-ə-ɛhi æṯi me:səj-ə udə æṯi mall-ə-ɛhi æṯi pot̪ə
room+the+in has table+the on has bag+the+in has book+the
the book in the bag on the table in the room

Use of suffixes and postpositions: It was shown above that Sinhala uses both suffixes and postpositions to show spatial relations. In some cases, where English uses the same preposition Sinhala may use either a postposition or a suffix depending on which sense of the preposition the speaker wants to convey. The following two examples illustrate the occurance of the postposition and the suffix in place of the English preposition on.

(7) galə udə sitinə monəra:
gal-ə udə sitinə monər-a:
rock+the on staying peacock+the
the peacock on the rock

The postposition udə, which is the only locative marker in the phrase, conveys the equivalent meaning of the preposition on in this example. The following is another example where on occurs.

(8) d̪ænwi:m puwəruwɛhi
d̪ænwi:m puwəruw-ə-ɛhi
bulletin board+the+on
on the bulletin board

In this example, the suffix -ɛhi in puwəruwɛhi is the locative case maker, which indicates the equivalent meaning of the English preposition on in English.

What we have seen in surface structures of Sinhala and English are the realizations of the same underlying elements.

Where English uses prepositions, Sinhala uses postpositions and suffixes instead.

One goal of this study will be to examine when Sinhala would use suffixes and when it would use postpositions in representing the meaning equivalents of the English prepositions selected for this study. To illustrate the difference between the suffixes and the postpositions, it is necessary to look into some semantic aspects of the postpositions. I will use one of the most frequent postpositions, to illustrate that the use of the suffix or the postposition depends on semantic aspects.

The postposition *udə* and the suffix *-ɛhi* represent different senses of the English preposition *on*. The preposition *on* has different senses with regard to its locative aspect. Linguists such as Herskovits (1986) and Ceinki (1989) have a given a central, core meaning for this preposition, which they label as the ideal meaning. The variations of the core meaning are given as use types.

Ceinki (1989: 63) gives three semantic conditions, support, contact with boundary, and attachment for the use of the preposition *on*. Of the above three, the semantic condition of support, can occur in various contexts.

The semantic condition 'support' and the preposition on: The preposition *on* occurs in various contexts. Among them are the instances where the localizer provides various types of support to the spatial entity. The following are examples:

(9)

a. *on the table* as in *the book on the table*

b. *on the mat* as in *the cat on the mat*

c. *on the roof* as in *the squirrel on the roof*

d. & e. *on my hand* as in *the ant running on my hand*

f. *on my hand* as in *the body of a mouse on my hand*

g. *on the lake* as in *the piece of wood floating on the lake*

h. *on the lake* as in the *boat sailing on the lake*

i. *on the lake* as in the *swan swimming on the lake*

j. *on the hook* as in *the umbrella on the hook*

k. *on the branch* as in *the dead leaves on the branch*

l. *on the head* as in *a hat on your head*

m. *on the clothes line* as in *the clothes on the clothes line*

n. *on a line* as in *a bird perched on a line*

o. *on the equator* as in *the countries on the equator*

p. *on the ceiling* as in *the spider on the ceiling*

q. *on the window* as in *the rain drops on the window*

r. *on the shirt* as in *the button on the shirt*

s. *on my finger* as in *the ring on my finger*

t. *on the lake* as in *a state on lake Michigan*

u. *on the border* as in *cities on the Mexican border*

Of these various kinds of contexts when the localizer is a supporting upward facing surface, on which the spatial entity is located, the postposition *udə* is used. The postposition *udə* is the only locative marker of the following phrases.

(9) a. me:səjə udə
me:səj-ə udə
table+the on
on the table

b. pæd̪urə udə
pæd̪ur-ə udə
mat+the on
on the mat

c. wahalə udə
wahal-ə udə
roof+the on
on the roof

Table, mat, roof all have an upward facing surface, and in the examples given the spatial entity is located on the upward facing surface of the localizer. The upward facing surface may be of any shape. For example, the shape of the roofs of buildings such as houses, temples and other types of buildings vary. Some roofs may be flat and others may have various types of slopes. Irrespective of its shape, a bird may sit on an upside down 'V' shape roof and the spatial relation ship is lexicalized using the postposition 'udə' as in the example, 9. c.

Example 9. d- f. illustrate this fact further. Example 9. d could be used only when one streches his hand so as to have an upward facing surface and shows that an ant is running on his hand, where as 9. e. the ant does not necessarily have to be seen as running on an upward facing surface of a hand. Example 9. f. shows when one shows a dead mouse kept on his palm.

(9) d. mage: at̯ə udə (d̯uwənə ku:ɓija:)
mage: at̯-ə udə (d̯uwənə ku:ɓij-a:)
my hand+the on (running ant+the)
on my hand
(the ant running on my hand)

e. mage: at̯ɛhi (d̯uwənə ku:ɓija:)
mage: at̯-ə-ɛhi (d̯uwənə ku:ɓij-a:)
my hand+on (running ant+the)
on my hand (the ant running on my hand)

f. mage: at̯ə udə (æt̯i mi:kunə)
mage: at̯-ə udə (æt̯i mi:kun-ə)
my hand+the on (has the dead body of a mouse)
on my hand (has the dead body of a mouse)
(the dead body of a mouse on my hand)

In the example 9. g. a) the piece of wood is conceived as floating on the surface of the water. It is equally acceptable to use 9. g. b) where the piece of wood is conceived as located within the boundaries of the lake. In examples, h. and i. the boat and the swan are seen as located within the boundaries of the lake. Since boats and swans are often seen within the boundaries of lakes, the use of the postposition 'udə' seems rather unusual . Therefore, in these examples, the volume of the water in the lake is conceived as a region with boundary rather than a supporting surface for the spatial entity.

(9) g. a) wæwə udə pa:wɛnə li:kotəjə
wæw-ə udə pa:wɛnə li:kotəj-ə
lake+the on floating piece of wood+the
the piece of wood floating on the lake

b) wæwɛhi pa:wɛnə li:kotəjə
wæw-ə-ɛhi pa:wɛnə li:kotəj-ə
lake+the on floating piece of wood+the
the piece of wood floating on the lake

h. wæwɛhi jənə oruwə
wæw-ə-ɛhi jənə oruw-ə
lake+the sailing boat+the
the boat sailing on the lake

i. wæwɛhi pi:nənə hansəja:
wæw-ə-ɛhi pi:nənə hansəj-a:
lake+the+on swimming swan+the
the swan swimming on the lake

The following are examples, where the localizer provides support for the spatial entity, and the localizer is not conceived as having an upward facing surface. The suffix -ɛhi occurs in such instances.

(9) j. kokkɛhi
kokk-ə-ɛhi
hook+the+on
on the hook

k. at̪t̪ɛhi
at̪t̪-ə-ɛhi
branch+the+on
on the branch

l. hisɛhi
his-ə-ɛhi
head+the+on
on the head

When a real line or an imaginery line is involved, the localizer is not conceived as having an upward facing surface, the suffix -ɛhi is used as the locative case marker.

(9) m. rɛd̪iwælɛhi
rɛd̪i-wæl-ə-ɛhi
clothes+line+the+on
on the clothes line

n. wælɛhi
wæl-ə-ɛhi
line+the+on
on a line

o. saməkəjɛhi
saməkəj-ə-ɛhi
equator+the+on
on the equator

The Semantic Condition Attachment: The following are the examples of attachment and their Sinhala translations.

(9) p. si:limɛhi
si:lim-ə-ɛhi
ceiling+the+on
on the ceiling

q. ǰane:ləjɛhi
ǰane:ləj-ə-ɛhi
window+the+on
on the window

r. kamisəjɛhi
kamisəj-ə-ɛhi
shirt+the+on
on the shirt

The phrases 9 d. and e. above compared with the phrase 9. s. below show, how Sinhala represents a moving object as the spatial entity in 'the ant running on my hand', compared with a spatial entity which is not moving or has restricted movements as in 'the ring on my finger'.

(9) s. mage: æg̃illɛhi (æt̪i mud̪uwə)
mage: æg̃ill-ə-ɛhi (æt̪i mud̪uwə)
my finger+the+on (has ring+the)
on my finger (the ring on my finger)

The suffix -ɛhi, attached to the localizer in Sinhala is used to express the meaning equivalent of attachment expressed by the preposition on in English.

The Semantic Condition Contact with Boundary: The semantic condition contact with the boundary is expressed in the examples 9. t. and u. These are translated using the suffix -ɛhi in Sinhala.

(9) t. wæwə ajinɛhi
wæwə ajin-ə-ɛhi
lake+the edge+the+in
on the lake
(at the edge of the lake)

u. ma:jimɛhi
ma:jim-ə-ɛhi
border+the+in
on the border

The above examples 9. a-u show that of the various senses expressed by the English preposition on, the postposition udə is only used when a spatial entity is located on an upward facing surface of a localizer. In all other instances the suffix -ɛhi is used.

It is worth mentioning here that both locative markers, the postposition udə and the suffix -ɛhi cannot be used together with the same noun to indicate the localizer. For example,

(10) a. * mage: at̪ɛhi udə
my hand on
on my hand

b. *galɛhi udə
rock+the+on on
on the rock

are not acceptable to Sinhala speakers because of its apparent redundancy. The correct usage is given in examples, (9) d. and (6) respectively.

Metaphorical uses

One of the areas that linguists find difficult to analyze are metaphors. The literal translation of a metaphor (word to word) may not give the same meaning in another language. Therefore, when considering metaphors it is important to translate the intended meaning rather than the literal meaning. Here are some metaphorical uses of *on* in English.

(11) a. *on you* as in *Do you have money on you?*
b. *on your mind* as in *What's on your mind?*
c. *on this occasion* as in *a speech on this occasion*

The Sinhala transaltions of the above are:

(11) a. obə lag̃ə
you near
near/with you

or

obe: at̪εhi
obe: at̪-ə-εhi
your hand+the+in
in your hand

b. obe: sit̪εhi
obe: sit̪-ə-εhi
your mind+the+on
on your mind

c. me: awasta̪:wεhi
me: awast̪a:w-ə-εhi
this occasion+the+on
on this occasion

Translation equivalents of Sinhala shows that the embodiment of English expressions can be quite different in Sinhala. For example, (11) a. shows that a person can have money in his hand or near/with him. But the examples, b. and c. seems to be similar to that of English. As indicated above linguists find it difficult to stipulate any rules regarding the metaphorical uses of any language or their translation equivalents.

Appearance of the verb form in Sinhala constructions

Now I will consider some more constructions that could appear in English. First, I will look at the stative expression, There is a book on the mat.

(12) pæd̲urə udə pot̲ak æt̲ə
pæd̲ur-ə udə pot̲a-k æt̲ə
mat+the on book+a lying
There is a book on the mat.

The same idea can be expressed in English as a noun phrase containing a prepositional phrase. The stative verb disappears in the English noun phrase, the book on the mat . The translation equivalent of this type of a simple phrase shows that the stative verb does not disappear in the Sinhala constructions.

(13) pæd̲urə udə æt̲i pot̲ə
pæd̲ur-ə udə æt̲i pot̲-ə
mat+the on lying book+the.
the book on the mat

The above example and the examples below, further illustrate the fact that the Sinhala constructions require a verb form which does not appear in the English translations. Consider the following:

(14) a. gɛjə pitupasə æt̲i maduwə
gɛj-ə pitupasə æt̲i maduw-ə
house+the behind has shed-the
the shed behind the house

b. lid̃ɛhi æt̪i wat̪urə
lid̃-ə-ɛhi æt̪i wat̪ur-ə
well+the+in has water+the
the water in the well

c. me:səjətə udin æt̪i pahanə
me:səjət-ə udin æt̪i pahan-ə
table+the above has lamp+the
the light above the table

d. pansələ id̪iripasə æt̪i bo:gasə
pansəl-ə id̪iripasə æt̪i bo:gas-ə
temple in front of has botree+the
the bo tree in front of the temple

e. gasə jatə sitinə le:na:
gas-ə jatə sitinə le:n-a:
tree+the under staying squirrel+the
the squirrel under the tree

f. pælæ:ti mæd̪ə æt̪i walpælə
pælæ:ti mæd̪ə æt̪i walpæl-ə
weeds the in between has weeds+the
the weeds in between the plants

g. me:səjə lag̃ə sitinə gæhænijə
me:səj-ə lag̃ə sitinə gæhænij-ə
table+the near staying woman+the
the woman at the table

h.	muhudu	ma:jimɛn	pahat̪ə	æt̪i	idam
	muhudu	ma:jim-ə-ɛn	pahat̪ə	æt̪i	idam
	sea	level+the+from	down	has	land+the

the land below the sea level

The relationship between the spatial entity and the localizer has been described by linguists such as Talmy (1980: 233,1983: p.258-259) in terms of geometric components. In English, the preposition of a spatial expression encodes a great deal about the geometry of the localizer, and all the semantic load is carried out by the preposition. But the preposition encodes little or none about the geometry of the spatial entity. As opposed to English, Sinhala spatial expressions carry information about the spatial entity. The verb form that occurs in the Sinhala spatial expressions tells us whether the spatial entity is animate or inanimate, whether it is moving or static and in some cases gives information about its orientation. First, I will discuss the animate inanimate distinction encoded in the verb form.

Significance of the animacy of the spatial entity: The distinction between animate and inanimate spatial entities affects the verb form of the Sinhala constructions. This sensitivity of the verb form in Sinhala spatial expressions is illustrated in the following examples.

(15)	a.	pæd̪urə	udə	sitinə	balla
		pæd̪ur-ə	udə	sitinə	ball-a
		mat+the	on	staying	dog+the

the dog on the mat

b. pæḏurə udə æṯi poṯə
pæḏur-ə udə æṯi poṯ-ə
mat+the on lying book+the
the book on the mat

These examples show that if the spatial entity is inanimate then the verb 'æṯi' is used and if the spatial entity is animate then the verb 'sitinə' is used.

The general rules of animacy apply in selection of verbs corresponding to the animacy of the spatial entity. For example, if the speaker is referring to a dead body, then the verb æṯi is used. If the speaker conceives the spatial entity as animate, then the verb sitinə is used.

(16) a. juḏə pitijɛhi sitinə solḏa:ḏuwa:
juḏə pitijɛhi sitinə solḏa:ḏuw-a:
war field staying soldier+the
the soldier on the war field

b. juḏə pitijɛhi æṯi malə sirurə
juḏə pitijɛhi æṯi malə sirur-ə
war field has dead body+the
the dead body on the war field

or

c. juḏə pitijɛhi æṯi solḏa:ḏuwa:ge: malə sirurə
juḏə pitijɛhi æṯi solḏa:ḏuw-a:-ge: malə sirur-ə
war field has soldier+the+#pos. dead body+the
the dead body of the soldier on the war field

# possesive marker

As it is in English, Sinhala represents a body of a person as an inanimate entity and hence the use of the verb æti.

Occurance of verb forms other than stative verbs

Following are some of the verbs that express the spatial relations in Sinhala. In Sinhala constructions, the occurance of the verb denoting an action and the stative verb that follows it represent a resultative state. The speaker conceives the state of the spatial entity as a result of the action of the verb. For example, in 17.a the Sinhala equivalent of 'the cat hiding under the table' shows that the cat is located under the table as a consequence of its action of hiding under the table.

(17) a. me:səjə jatə hæg̃i: sitinə baləla:
me:səj-ə jatə hæg̃i: sitinə baləl-a:
table+the under hiding staying cat+the
the cat hiding under the table

b. oluwɛn sitəgɛnə sitinə minisa:
oluw-ə-ɛn sitəgɛnə sitinə minis-a:
head+the+with standing staying man+the
the man standing on his head

c. æd̃ə udə nid̯a:gɛnə sitinə lad̯əruwa:
æd̃-ə udə nid̯a:gɛnə sitinə lad̯əruw-a:
bɛd+the on sleeping staying child+the
the baby sleeping on the bed

d. pahan at̪ərə æt̪i itipand̪əmə
pahan+^{0} at̪ərə æt̪i itipand̪əmə
lamps+the in between has candle+the
the candle in between the lamps

e. gasɛhi ɛt̪i: æt̪i wælə
gas-ə-ɛhi ɛt̪i: æt̪i wælə
tree+the+in twined has vine+the
the vine twined on the tree

f. me:səjə asələ jat̪uru lijəmin sitinə gæhænijə
me:səj-ə asələ jat̪uru lijəmin sitinə gæhænij-ə
table+the near key writing staying woman+the
the woman typing at the table

g. at̪t̪ɛhi ɛlli: sitinə wawula:
at̪t̪-ə-ɛhi ɛlli: sitinə wawul-a:
branch+the+in hanging staying bat+the
the bat hanging on the branch

h. nil kamisəjə hæd̃ə sitinə laməja:
nil kamisəj-ə hæd̃ə sitinə laməj-a:
blue shirt+the has worn staying child+the
the child in blue shirt

i. wælɛhi ɛlla æt̪i rɛd̪i
wæl-ə-ɛhi ɛlla æt̪i rɛd̪i+^{0}
line+the+in hanging has clothes+the
the clothes on the line

j.

d̯amwælɛn	bæd̃ə	sitinə	balla:
d̯amwæl-ə-ɛn	bæd̃ə	sitinə	ball-a:
leash+the+with	tied	staying	dog+the

the dog on the leash

k.

putuwə	udə	hid̃əgɛnə	sitinə	minisa:
putuw-ə	udə	hid̃əgɛnə	sitinə	minis-a:
chair+the	on	sitting	staying	man+the

the man on the chair

All these examples present resultative states in Sinhala. For exampe, in 17. j. the verb hæd̃a sitinə indicates the consequence of wearing the shirt. In 17. k. ɛlla æti indicates that the speaker conceives the clothes as a result of somebody's hanging them on the line and in 17. l. bæd̃ə sitinə is a resultative state of somebody's tying the dog. All these give information about the orientation (i. e. what action has caused the spatial entity to be in that state) of the spatial entity.

It is worth mentioning here the difference between the examples 3.d and 17.k. The difference between these two seems purely pragmatic. If a speaker wants to emphasise the action that caused the location of the spatial entity, then he may choose 17.k. If he is refering just to the locality of the spatial entity then the he would prefer the example 3.d.

As indicated earlier, the location of the spatial entity in relation to the localizer is expressed using either a postposition or a suffix in Sinhala. The special feature in Sinhala spatial expressions is that Sinhala also shows how the spatial entity is oriented in relation to the localizer.

Lative spatial expressions in Sinhala

The embodiment of information in lative expressions are different compared with the locative constructions in Sinhala. Lative spatial expressions indicate a movement of the spatial entity in relation to the localizer. Following are some examples of lative spatial constructions in Sinhala.

(18) a. attə d̪ige: d̪uwənə le:na:
att-ə d̪ige: d̪uwənə le:n-a:
branch-the along running squirrel+the
the squirrel running along the branch

b. pa:rə dige: æwid̪inə laməja:
pa:r-ə dige: æwid̪inə laməj-a:
road+the along walking child+the
the children walking along the road

c. me:səjə udətə pænnə baləla:
me:səj-ə udətə pænnə baləl-a:
table+the onto jumped cat+the
the cat jumped onto the table

d. lid̪̃ə æt̪ulətə wætunu le:na:
lid̪̃-ə æt̪ulətə wætunu le:n-a:
well+the into fell squirrel+the
the squirrel fell into the well

e. ku:duwɛn iwət̪ətə pijæ:ɓu: kurulla:
ku:duw-ə-ɛn iwət̪ətə pijæ:ɓu: kurull-a:
cage+the+from out of flew bird+the
the bird flew out of the cage

f. nuwərə sitə ɛnə basəjə
nuwərə sitə ɛnə basəj-ə
kandy from coming bus-the
the bus coming from Kandy

g. nuwərin pitat̪wɛnə basəjə
nuwərə-in pitat̪wɛnə basəj-ə
Kandy-from leaving bus+the
the bus leaving Kandy

h. nuwərətə jənə basəjə
nuwərə-tə jənə basəj-ə
kandy-to going bus+the
the bus going to Kandy

i. t̪attuwɛn iwət̪ətə wætunu pot̪ə
tattuw-ə-ɛn iwət̪ətə wætunu pot̪-ə
shelf+the+from off fell book+the
the book fell off the shelf

j. wæwə harəha: pi:nu: hansəja:
wæw-ə harəha: pi:nu: hansəj-a:
lake+the across swam swan+the
the swan swam across the lake

k. wæwətə udin pijæ:ɓu: kurullo:
wæw-ə-tə udin pijæ:ɓu: kurull-o:
lake+the+to above flew birds+the
the birds flew above the lake

Since these examples express a movement of the spatial entity they do not contain a stative verb. The spatial relations between the two entities are expressed in terms of spatial verbs and either a case marker (example g.) or a postposition (example f.).

Constraints on the verb form

The following examples illustrate the constraints on using the verb forms in locative constructions in Sinhala. Both of the following phrases could be used and are grammatical in Sinhala.

(19) nil kamisəyɛhi æṯi pælləmə
nil kamisəy-ə-ɛhi æṯi pælləm-ə
blue shirt+the+in has stain+the
the stain on the blue shirt.

(20) nil kamisəyɛhi pælləmə
nil kamisəy-ə-ɛhi pælləm-ə
blue shirt+the+in stain+the
the stain on the blue shirt

but again,

(21) *nil kamisəjɛhi minisa
nil kamisəj-ə-ɛhi minisa
blue shirt+the+in the man
the man in the blue shirt

would be unacceptable. Also look at the following examples.

(22) me:səjə udə æt̪i pot̪ə
me:səj-ə udə æt̪i pot̪-ə
table+the on has book+the
the book on the table

(23) me:səjə udə sitinə baləla:
me:səj-ə udə sitinə baləl-a:
table+the on has cat+the
the cat on the table

The acceptability of the following constructions, as locative noun phrases, without the verb is questionable.

(24) a) *me:səjə udə pot̪ə
b) *me:səjə udə baləla:

The unacceptability of the constructions in (24) seems to be due to their incompleteness (i.e. omission of the verb).

The spatial entity *pællamə* (the stain) is seen as an inseparable part of *kamisəjɛhi* (in the shirt). When a part whole relationship is expressed, Sinhala has the choice of omitting the verb form. The following examples illustrate this fact further.

(25) a. at̪ɛhi æt̪i æg̃ili
at̪-ə-ɛhi æt̪i æg̃il-i
hand+the+in has fingers+the
the fingers in the hand

or

b. at̪ɛhi æg̃ili
at̪-ə-ɛhi æg̃il-i
hand+the+in fingers+the
the fingers in the hand

c. me:səjɛhi æt̪i kakul
me:səj-ə-ɛhi æt̪i kakul-^{0}
table+the+in has legs+the
the legs of the table

or

d. me:səjɛhi kakul
me:səj-ə-ɛhi kakul-^{0}
table+the+in legs+the
the legs of the table

e. obe: hisɛhi (æt̪i) kɛs
obe: his-ə-ɛhi (æt̪i) kɛs-^{0}
your head+the+on (has) hair
the hair on your head

Therefore, when the relationship between the spatial entity and the localizer is seen as a part whole relationship in a locative construction the verb is optional as in the example (19) above.

Summary

This discussion shows that the equivalent expressions of prepositional spatial constructions in English are constructed in Sinhala using suffixes or postpositions depending on the meaning that the speaker wants to convey. In English spatial prepositional expressions, the spatial entity is described in relation to the localizer in a projected space. It was shown that in Sinhala, in addition to the description of the location of the spatial entity, the orientation of the spatial entity too is shown with reference to the localizer in the projected space. Also it was shown that this is done by means of a stative verb. These stative verbs are sensitive to animate/inanimate, part/whole, and resultative distinctions.

In conclusion, spatial expressions in Sinhala show that what Sinhala speakers conceive and conceptualize are not only the relation of the spatial entity to the localizer, but also the states, events and actions which are involved in originating those schematizations.

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DIVISION OF LABOR BETWEEN GRAMMAR AND PRAGMATICS CONCERNING ANAPHORA

Sun-Hee Kim

Abstract: This paper addresses the problem of the distribution and interpretation of the Korean long-distance anaphor *caki* and its pronominal counterpart *ku*. The first part of this paper reviews previous analyses and shows that the distribution of *caki* and *ku* cannot be fully accounted for in purely structural terms. I will then provide an alternative analysis within the neo-Gricean theory of implicature (Grice 1975, Horn 1984, Levinson 1991). Finally, I will discuss some cases where *caki* and *ku* appear to be in free variation and argue that the account provided here can be generalized to cover those cases as well.

I. Introduction

Anaphora,[1] which plays a crucial role in the Government-Binding theory,[2] is the phenomenon whereby one linguistic element, lacking clear independent reference, can pick up reference through connection with another linguistic element (Levinson 1987:379, cf. Chomsky 1981, 1986, van Riemsdijk and Williams 1986). Recently it has been pointed out that there are languages with long-distance reflexives, and that in those languages reflexives and pronouns are not always in complementary distribution (Huang 1991, Levinson 1991, Maling 1984, among others). Protagonists of the Government-Binding theory treat this problem either by parameterizing the Binding domain or by proposing LF-movement for long-distance reflexives (Chomsky 1986a, Yang 1983, 1989, see also Yoon 1989 for discussion). On the other hand, there also have been various attempts to re-apportion the burden of account between grammar and pragmatics (Reinhart 1983a, b, Farmer and Harnish 1987, Levinson 1987, 1991).

The purpose of this paper is to propose an account of certain central problems of anaphora within the neo-Gricean theory of implicature (Grice 1975, 1978, Horn 1984, Huang 1991, Levinson 1987, 1991), on the basis of data from Korean. We shall argue that anaphora cannot be fully explained by structural conditions only. Rather, in line with Levinson (1987, 1991), it will be suggested that all we need in our grammar for the account of the distribution and interpretation of

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anaphora, at least in languages like Korean, is grammatically specified conditions for a reflexive. It will then be claimed that everything else is achievable by the systematic interaction of neo-Gricean pragmatic principles, which are further constrained by the Disjoint Reference Presumption (DRP).

We shall begin with a brief presentation of the facts.

II. Basic Properties of the Korean Reflexive

1. Subject orientation[3]: The most prominent characteristic of the major 3rd person reflexive *caki* is that it is coindexed with subjects of NP or S as shown in (1) and (2).[4]

(1) John$_i$-i caki$_i$-lul hyemohanta[5]
John-Nom self-Acc hate
'John$_i$ hates self$_i$.'

(2) na-nun [John$_i$-uy caki$_i$ emma-eytayhan thayto]-lul
I-Top John-Gen self mom-toward attitude-Acc
cohahacianhnunta
like-not
'I don't like John$_i$'s attitude toward self$_i$'s mother.'

(3) a.* na-nun John$_i$-ul-wihay caki$_i$-uy pang-ul chengsohayssta
I-Top John-Acc-for self-Gen room-Acc cleaned
'I cleaned self$_i$'s room for John$_i$'

b. na-nun John$_i$-ul-wihay ku$_i$-uy pang-ul chengsohayssta
I-Top John-Acc-for he-Gen room-Acc cleaned
'I cleaned his$_i$ room for John$_i$'

(4) John$_i$-i Mary$_j$-eykey [e$_j$ caki$_{i/j}$-lul hyemohacimala]-ko
John-Nom Mary-to self-Acc hate-not -that
malhayssta
said
'John$_i$ told Mary$_j$ not to hate self$_{i/j}$'

The ungrammaticality of (3a) is due to the coindexing of *caki* with the non-subject NP *John* . The 3rd person definite pronoun *ku* , on the other hand, does not show Subject Orientation, as in (3b). The coindexing of *caki* with the non-subject NP *Mary* in (4) does not raise any problem here, since it can be argued that the real antecedent of *caki* is not *Mary*, but the empty element *e* which is the subject of the embedded clause, which is further controlled by *Mary*. Thus the requirement that *caki* should be coindexed with a subject is not violated.

2. No clause-mate requirement: In English, a reflexive and its antecedent must be in the same clause. But in Korean, there is no such clause-mate requirement.

(5) John$_i$-un [Bill$_j$-i caki-$_{i/j}$lul hyemohantanunkes]-ul anta
John-Top Bill-Nom self-Acc hate that -Acc know
'John$_i$ knows that Bill$_j$ hates self$_{i/j}$.'[6]

(6) John$_i$-un [Mary$_j$-ka [caki$_{i/j}$-ka chencay-la]-ko malhankes]-ul
John-Top Mary-Nom self-Nom genius-is-that said-Acc
kiekhanta
remembers
'John$_i$ remembers that Mary$_j$ said that self$_{i/j}$ is a genius.'

(7) John$_i$-i [caki$_i$-ka aphuta]-ko malhayssta
John-Nom self-Nom sick-that said
'John$_i$ said that self$_i$ is sick.'

(8) John$_i$-un [nay-ka caki$_i$-lul cohahanunkes]-ul acikto molunta
John-Top I-Nom self-Acc like that-Acc yet don't know
'John$_i$ still doesn't know that I like self$_i$.'

(9) John$_i$-un [ney-ka caki$_i$-uy chin apeci- lanunkes]-ul moluni?
John-Top you-Nom self-Gen biological father- is that-Acc
don't know-Q
'Doesn't John$_i$ know that you are self$_i$'s biological father?'

The occurrences of *caki* in the above sentences indicate that *caki* can be coindexed with subjects which are outside the clause where it occurs. That is, *caki* can be long-distance bound.

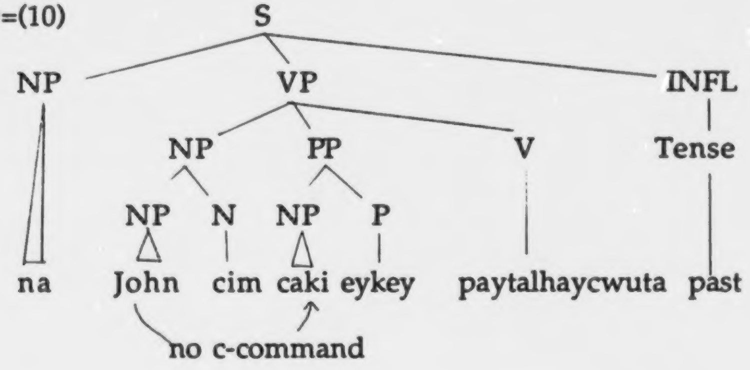
3. C-command requirement: Although *caki* may be coindexed with subjects outside its minimal clause, it is not the case that any subjects are eligible to be its antecedent. It is only c-commanding[7] subjects that can be the antecedent of it.

(10) * nay-ka [John$_i$-uy cim]-ul caki$_i$-eykey paytalhay cwuessta
I-Nom John-Gen luggage-Acc self-to deliver gave
'I delivered John$_i$'s luggage to self$_i$'

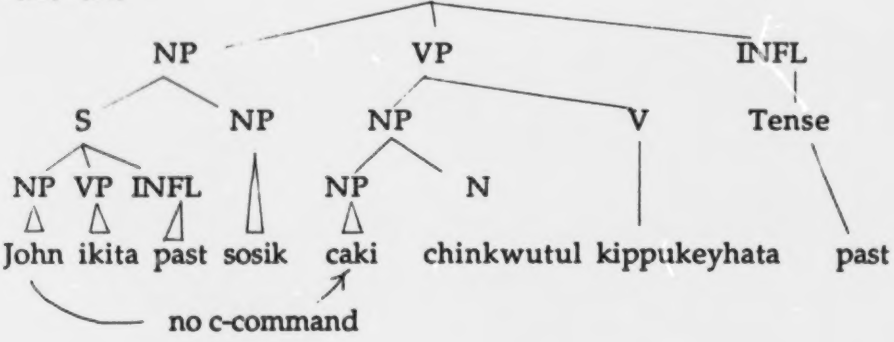
(11) * [John$_i$-i ikiesstanun sosik]-i caki$_i$-uy chinkwutul-ul
John-Nom won news-Nom self-Gen friends-Acc
kippukey hayssta
made happy
'The news that John$_i$ won made self$_i$'s friends happy.'

In the above sentences, the subject NP *John* that *caki* is coindexed with does not c-command it, as illustrated in (12) and (13), respectively. As expected, they are not acceptable.

(12)=(10)


S
NP
VP
INFL
NP
PP
V
Tense
NP
N
NP
P
na
John
cim
caki
eykey
paytalhaycwuta
past
no c-command

(13)=(11)


S
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Tense
NP
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INFL
NP
N
John
ikita
past
sosik
caki
chinkwutul
kippukeyhata
past
no c-command

In sum, *caki* may be interpreted as coreferential with c-commanding subjects, no matter how far away.

III. Previous Analyses within the GB Framework

At first sight, the properties of *caki* seem to be problematic to Binding Theory, according to which a reflexive must be bound in its governing category. How could *caki* be long-distance bound, if it is a true reflexive? The proposed answer is simple. A reflexive can be long-distance bound if it has no governing category. That is, the absence of a governing category may license a reflexive to be bound across clauses (Yang 1983). This assumption appears to be supported by Korean. It is well known that Korean lacks AGR. Given that governing category is defined as follows:

> @ is the governing category for X if and only if @ is the minimal category containing X, a governor of X, and a SUBJECT accessible to X (van Riemsdijk and Williams 1986:275).

the lack of AGR as a possible governor of *caki* leads to the elimination of the governing category. This analysis , however, is confronted with a serious problem immediately. According to Principle B of Binding Theory, a pronoun must be free in its governing category. If Korean lacks a governing category for reflexive binding due to the lack of AGR, a pronoun should turn out to be free everywhere, given that the governing category of the pronominal disjoint reference principle is identical to the governing category of the reflexive binding within the GB framework (Park 1986).

(14) John$_i$-un Tom$_j$-ul ku$_j$-uy cip-ulo tollyeponayssta
John-Top Tom-Acc he-Gen house-to sent back
'John$_i$ sent Tom$_j$ back to his$_j$ house.'

(15) John$_i$-un [Mary$_j$-ka ku$_i$-lul cohahanta]-nun kes-ul
John-Top Mary-Nom he-Acc like - thing -Acc
moluko issessta
didn't know
'John$_i$ didn't know that Mary$_j$ liked him$_i$.'

Contrary to expectations, however, the 3rd person definite pronoun *ku* in (14) and (15) is coindexed with a c-commanding NP within the sentence; i.e., *ku* is not free. The anaphor-binding domain and the pronominal disjoint reference domain, therefore, cannot be identical in Korean.

Yang (1983:1) suggests that some of the radical variations in anaphor-binding phenomena across languages naturally follow from Chomsky's original Binding Theory with a minimal parametrization. He parameterizes the notion SUBJECT and AGR for individual languages based on whether a language is marked or unmarked[8] with respect to binding phenomena[9].

Given that Korean lacks AGR and that Korean reflexive is marked by virtue of being long-distance bound, he proposes the following:

1. Reflexives are bound everywhere in a sentence.
2. Pronominals are not bound in the c-domain[10] of their minimal SUBJECTS that contain their governors.
   (i) A is a minimal SUBJECT of B, iff A is the SUBJECT in the minimal category that contains B and a SUBJECT.
   (B may also count as a SUBJECT.)

Even though this analysis might be descriptively adequate, it not only lacks independent motivation, but it also goes against the spirit of the original binding theory, for in the analysis proposed above, there is no overlap between the anaphor-binding domain and the pronominal disjoint reference domain: That is, the basic idea of Chomsky's original theory is that where a reflexive can be coindexed with a given NP, no other pronoun (or NP) can be coreferential with this NP (i.e., anaphors and pronominals are in complementary distribution), and it follows from the notion of the governing category which is uniformly defined both for anaphor-binding and the pronominal disjoint reference principle (Chomsky 1981, Park 1986, Reinhart 1983a).

As an alternative, LF-movement of anaphors has been proposed (Chomsky 1986a, Katada 1991, Yang 1989). The main idea goes as follows: By assuming that X^0 anaphors[11] undergo successive cyclic head movement to the INFL position leaving a trace behind, we can account for why certain anaphors are long-distance bound and why long-distance bound anaphors are subject-oriented. In other words, if X^0 anaphors may move through the spec of CP just like a wh-movement (see Chomsky 1986b), we can account for the fact that X^0 anaphors may be bound from beyond the so-called local binding domain (Yang 1989:436). And if the X^0 anaphor adjoins to INFL as a landing site, the fact that the X^0 anaphor is subject oriented can be readily explained, since the anaphor adjoined to INFL can only be locally bound by the subject. Binding Principles, which apply to LF representation now would hold not of the antecedent-anaphor relation but of the anaphor-trace relation (Chomsky 1986a:175).

With these modifications, we no longer need to stipulate different governing categories for anaphor-binding and the pronominal disjoint reference. Rather, the seemingly different choice of governing category for anaphors and pronouns follows from their basic binding properties.

This analysis, however, is not without problems. By assuming that X^0 anaphors adjoin to INFL, there is no way to account for exceptions to subject orientation.

(16) na-nun Mary$_i$-loputhe [caki$_i$-ka aphassta]-nun iyaki-lul
I-Top Mary-from self-Nom was sick - story-Acc
tulessta
heard
'I heard from Mary$_i$ that self$_i$ was sick.'

(17) [Mary-ka caki$_i$-lul pinanhayssta]-nun sasil-i John$_i$-ul
Mary-Nom self-Acc criticized - fact-Nom John-Acc
hwanakey hayssta
made angry
'The fact that Mary criticized self$_i$ made John$_i$ angry.'

In the above sentences, the reflexive *caki* is not bound by a c-commanding subject, but by a non-subject NP outside the minimal clause. One might argue that the reflexive *caki* may adjoin to VP instead of INFL, so that it can be c-commanded by the object as well as the subject, under a slight revision of the notion C-COMMAND which may well be required for other cases not discussed here (see Chomsky 1986a:175). But in order to account for the fact that X^0 anaphors are basically subject oriented and that only in certain circumstances[12] may they be coindexed with non-subject NPs, we should stipulate that X^0 anaphors which adjoin to INFL in unmarked cases may adjoin to VP in certain circumstances. Furthermore, it is impossible to isolate syntactic circumstances within which X^0 anaphors do not show subject orientation. Thus we need to consider the possibility of a more general account which can also handle what seems to be problematic to approaches within the GB framework.

IV. Toward a Solution

1. Our starting point in the anaphora question will be to observe that wherever reflexives occur, non-reflexive pronouns are interpreted as non-coreferential, and wherever reflexives are syntactically excluded, the non-reflexive pronouns can have a coreferential interpretation (Sadock 1983, see also Dowty 1980).

The major weakness of the previous analyses rests on the fact that they fail to capture this general property which Korean anaphora shares with other languages, and that they are not able to adequately define the circumstances under which *caki* occurs, excluding the occurrence of the non-reflexive pronoun if a coreferential interpretation is intended, and the (non-syntactic) environments in which *caki* is allowed to be replaced by *ku* without affecting the coreferential interpretation[13].

Consider the following examples:

(18) a. John$_i$-un caki$_i$-lul kkocipessta
John-Top self-Acc pinched
'John$_i$ pinched self$_i$.'

b.* John$_i$-un ku$_i$-lul kkocipessta
John-Top he-Acc pinched
'John$_i$ pinched him$_i$.'

(19) a. John$_i$-i caki$_i$-lul-wihay Mary-lul koyonghayssta
John-Nom self-Acc-for Mary-Acc employed
'John$_i$ employed Mary for self$_i$.'

b.*John$_i$-i ku$_i$-lul-wihay Mary-lul koyonghayssta
John-Nom he-Acc-for Mary-Acc employed
'John$_i$ employed Mary for him$_i$.'

(20) a. John$_i$-un caki$_i$-eykey-cocha nekulepci moshata
John-Top self-to-even generous not
'Speaking of John$_i$, he is not generous even to self$_i$.'

b.*John$_i$-un ku$_i$-eykey-cocha nekulepci moshata
John-Top he-to-even generous not
'Speaking of John$_i$, he is not generous even to him$_i$.'

(21) a. caki$_i$-lul John$_i$-i sinlalhakey piphanhayssta[14]
self-Acc John-Nom severely criticized
'John$_i$ severely criticized self$_i$'

b.*ku$_i$-lul John$_i$-i sinlalhakey piphanhayssta
he-Acc John-Nom severely criticized
'John$_i$ severely criticized him$_i$.'

The (b) sentences are ungrammatical since *ku* occurs where *caki* is syntactically allowed; i.e., the pronoun is c-commanded by the subject NP. If the subject-coreferential reading is not intended, however, the (b) sentences are all acceptable, as expected.

(22) a.*nay-ka John$_i$-ul caki$_i$-uy kapang-ulo ttaylyessta[15]
I-Nom John-Acc self-Gen bag-with hit
'I hit John$_i$ with self$_i$'s bag.'

b. nay-ka John$_i$-ul ku$_i$-uy kapang-ulo ttaylyessta
I-Nom John-Acc he-Gen bag-with hit
'I hit John$_i$ with his$_i$ bag.'

(23) a.*[John$_i$-i Mary-lul-wihay ssun chayk]-i caki$_i$-lul
John-Nom Mary-Acc-for wrote book-Nom self-Acc
kippukey hayssta
made happy
'The book which John$_i$ wrote for Mary made self$_i$ happy.'

b. [John-i$_i$ Mary-lul-wihay ssun chayk]-i ku$_i$-lul
John-Nom Mary-Acc-for wrote book-Nom he-Acc
kippukey hayssta
made happy
'The book which John$_i$ wrote for Mary made him$_i$ happy.'

(24) a.*nay-ka [John$_i$-i ilhepelin kapang]-ul caki$_i$-eykey
I-Nom John-Nom lost bag-Acc self-to
chacacwuessta
found and returned
'I found the bag which John$_i$ lost and returned it to self$_i$.'

b. nay-ka [John$_i$-i ilhepelin kapang]-ul ku$_i$-eykey
I-Nom John-Nom lost bag-Acc he-to
chacacwuessta

found and returned
'I found the bag which John$_i$ lost and returned it to him$_i$.'

(25) a.*John$_i$-uy emma-maceto caki$_i$-lul salanghaci anhnunta
John-Gen mom-even self-Acc love not
'Even John$_i$'s mom doesn't love self$_i$.'

b. John$_i$-uy emma-maceto ku$_i$-lul salanghaci anhnunta
John-Gen mom-even he-Acc love not
'Even John$_i$'s mom doesn't love him$_i$'

The ungrammaticality of the (a) sentences above is due to the fact that the reflexive fails to be bound[16] by the subject. Thus, coreferential reading of the pronoun *ku* with the subject is allowed.

In other words, *ku* is interpreted as noncoreferential with an NP with which *caki* is allowed to be coreferential, and as coreferential when *caki* is excluded. That is, they are in complementary distribution in terms of the coreferential interpretation.

This shows that even though the contrast between the reflexive and non-reflexive pronouns in Korean seems to have quite a different foundation from languages like English (O'Grady 1987) in that governing category has nothing to do with the complementary distribution of the reflexive and non-reflexive pronouns, it may still be the case that Korean syntax contains some mechanism allowing coindexing of the reflexive pronoun with NPs under appropriate syntactic condition, and prohibiting the pronoun from being coreferential with NPs in certain environments. The coindexing and non-coreference condition can be stated roughly as follows.

(26) Coindex a reflexive with a c-commanding subject.[17]

(27) Coreference is impossible if a given subject NP c-commands a non-reflexive pronoun.[18]

However, close examination of (26) and (27) reveals that the non-coreference condition (27) is a precise mirror image of the coindexing mechanism in (26). That is, they have the effect of guaranteeing that whenever coreferential interpretation is syntactically allowed between two NPs, if we do not use this option which the grammar provides, we will get non-coreference (Reinhart 1983a:75). In other words, in environments that allow a reflexive to occur, we get non-coreference if we instead use a non-reflexive pronoun.

Then (26) and (27) can be restated as follows:

(28) a. An NP c-commanded by a subject should be a reflexive, if coreference is intended.
  b. Otherwise, it is non-coreferential.

Given this effect, there is no reason to assume that we need special rules of the grammar to capture this mirror image non-coreference result. It can be achieved through an appeal to a system of pragmatic implicatures (Reinhart 1983a, b, Levinson 1987, 1991), which will be stated below in detail.

Grice (1975) suggests that in our talk exchanges, there is an underlying principle which participants will be expected to observe, namely the Cooperative Principle: Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged (Grice 1975:45). Under this general principle, he establishes four specific maxims such as Quality, Quantity, Relation, and Manner (Grice 1975:45-46).

(29) Quality: Try to make your contribution one that is true.
  1. Do not say what you believe to be false.
  2. Do not say that for which you lack adequate evidence.

(30) Quantity: 1. Make your contribution as informative as is required (for the current purposes of the exchange).
  2. Do not make contribution more informative than is required.

(31) Relation: Be relevant.

(32) Manner: Be perspicuous.
  1. Avoid obscurity of expression.
  2. Avoid ambiguity.
  3. Be brief (avoid unnecessary prolixity).
  4. Be orderly.

In Horn (1984), the original Gricean mechanism has been revised. Based on the observation that the first Quantity maxim is essentially

Zipf's Auditor's Economy (i.e. the force of diversification), the second Quantity maxim is akin to Relation, and most of the remaining principles respond to the Zipf's Speaker's Economy (i.e. the force of unification), Horn suggests that all of Grice's maxims (except Quality) can be reduced to two fundamental principles, namely the Q- and R-principles (Horn 1984:12-13; see also Levinson 1987, Huang 1991 for discussion).

(33) a. The Q-Principle (Hearer-Oriented):
Make your contribution sufficient;
Say as much as you can: i.e., Do not provide a statement that is informationally weaker than your knowledge of the world allows, (bearing the maxim of Quality and R-Principle in mind).
Lower-Bounding Principle, inducing upper-Bounding implicata; i.e., a speaker, in saying '—P—' implicates that (for all he knows) '—at most P —'.

b. The R-Principle (Speaker-Oriented):
Make your contribution necessary;
Say no more than you must: i.e., Produce the minimal linguistic information sufficient to achieve your communication ends, (bearing the Q-Principle in mind).
Upper-Bounding Principle, inducing Lower-Bounding implicata; i.e., a speaker, in saying '—P—' implicates that '—more that P—'.

The Q-principle and the R-principle work in opposing directions: The Q-principle would generate the inference of the negation of a stronger reading from the use of an informationally weaker expression (Levinson 1987: 407), while an R-based inference leads to a more informative reading than its logical form suggests. Considering the interaction between the Q- and R- principles, Horn (1984: 22) claims that there is a resolution to the conflict between them, which he labels THE DIVISION OF PRAGMATIC LABOR.

(34) The Division of Pragmatic Labor:
The use of a marked (relatively complex and / or prolix) expression when a corresponding unmarked (simpler, less EFFORTFUL) alternate expression is available tends to be interpreted as conveying a marked message (one which the unmarked alternative would not or could not have conveyed).

1. The R-principle induces a stereotypical interpretation: The unmarked expression E tends to become associated (by use or — through conventionalization — by message) with unmarked situation s, representing a stereotype or salient member of the extension of E / E'.
2. The marked alternative E' Q-implicates the complement of s with respect to the original extension of E / E'.

Horn's proposal above is questioned by Levinson (1987). Levinson insists that a distinction should be made between principles governing an utterance's surface form and principles governing its informational content (see Huang 1991: 5). According to him, the contrast involved in Horn's DIVISION OF PRAGMATIC LABOR is a contrast between marked and unmarked, brief and prolix expressions, and this has nothing to do with quantity of information. Rather, it has to do with an utterance's surface form, so the implicature responsible for this contrast should be attributed to the maxim of Manner; i.e. M-principle. The Q-principle, on the other hand, is claimed to induce a contrastive interpretation between paired expressions of differential semantic strength of informativeness: i.e., The Q-principle operates only on clearly defined contrast sets, of which the Horn scale[19] is prototypical (Levinson 1987: 408, 409). On Levinson's view, the Gricean mechanism can thus be replaced by the following three principles: the Q-principle, the I-principle (Horn's R-principle),[20] and the M-principle (Levinson 1987: 409, 1991: 4-6).

(35) a. The Q-Principle, which takes precedence over other principles, induces a contrastive interpretation from tight contrast sets of equally brief, equally lexicalized linguistic expression ABOUT the same semantic relations.

b. The I-principle induces stereotypical specific interpretations when the Q-principle fails to apply.

c. The M-principle, which overrides the I-principle, induces from the use of a prolix or marked expression an interpretation that is complementary to the one that would have been induced by the I-principle from the use of a semantically general expression.

Given this tripartite classification of general pragmatic principles, we can now reduce the phenomena presented in (28) to some extent. All we need in our grammar for the account of the distribution and interpretation of Korean anaphora is a coindexing mechanism in (28a). The non-coreference effect in (28b) is then predicted by the Q-principle. That is, the contrast <REFLEXIVE, PRONOUN> forms a Horn-scale, so that the use of a non-reflexive pronoun, an informationally weaker expression, wherever a reflexive is syntactically permitted (i.e. when a given NP is bound by a subject), will Q-implicate a non-coreferential interpretation. When the syntax does not permit a direct encoding of co-referentiality by the use of a reflexive (i.e. when a given NP is not bound by a subject), a non-reflexive pronoun will favor a coreferential interpretation by the I-principle, based on the assumption that a pronoun is an unmarked instance of the coreferential reading[21] (see Levinson 1991: 8-9).

The only relevant syntactic condition for Korean anaphora, therefore, is the following, which can be dubbed SUBJECT ORIENTATION .

(36) Subject Orientation: A reflexive must be bound (i.e. coindexed and c-commanded) by a subject in Korean.

The rest of the facts follow from general pragmatic principles.

2. The crucial difference between the analysis proposed here and a purely syntactic account is that while the latter marks each occurrence of a non-reflexive pronoun c-commanded by a subject as ungrammatical if coreference is intended, the former may allow coreference in such cases if the avoiding of a reflexive is pragmatically motivated (see Reinhart 1983a:77).

Consider the following examples:

(37) John$_i$-un [nay-ka {caki$_i$ / ku$_i$}-lul miwehanta]-ko
John-Top I-Nom self / he-Acc hate -that
sayngkakhanta
think
'John$_i$ thinks that I hate self$_i$ / him$_i$.'

(38) John$_i$-un [nay-ka Tom$_j$-eykey {caki$_i$ / ku$_{i/j}$}-uy sacin-ul
John-Top I-Nom Tom-to self / -Gen picture-Acc
poyecwueyahanta]-ko malhayssta
that said
'John$_i$ said that I should show self$_i$'s / his$_{i/j}$ picture to Tom$_j$.'

(39) John$_i$-un [[caki$_i$ / ku$_i$- ka salang-ey ppacyessta]-ko malhayssta
John-Top self / he -Nom love-in fell -that said
'John$_i$ said that self$_i$ / he$_i$ was in love.'

The sentences (37)-(39) are apparent counter-examples to our analysis, for the use of the non-reflexive pronoun *ku* , when the reflexive *caki* is syntactically allowed, does not make any difference in reference: *caki* and *ku* seem to be in free variation, contrary to the tendency for anaphors and pronominals to be in complementary distribution. However, if we can show that there are systematic reasons why a Q-implicature fails to arise just in these cases, the above sentences would no longer be a problem.

Considering such phenomena cross-linguistically, Kuno (1972, 1987) points out that even though both a reflexive and a pronoun refer to the same individual, there are still subtle meaning differences expressed by choosing a reflexive or a pronoun[22] (see Kuroda 1973). He argues that the neutralization of the opposition between a reflexive and a pronoun is only at the level of reference; there remains a semantic / pragmatic contrast, which he claims to be one of POINT OF VIEW: The reflexive pronoun may require that the speaker take its referent's point of view while the non-reflexive pronoun allows the normal, deictic, objective point of view (see Kuno and Kaburaki 1977, Levinson 1991).

For instance, in (37)-(39), if the speaker describes the sentences by assuming the matrix subject *John* 's point of view; i.e. if the speaker identifies himself with *John* (see Chang 1977, DeLancey 1981), the element bound to *John* should be realized as a reflexive *caki* . On the other hand, if there is no identification between the speaker and *John* ; i.e. if the speaker utters the sentences from an objective point of view, the element bound by *John* may turn out to be *ku* . The possible coindexing of *ku* with the non-subject NP *Tom* in (38) does not require any alternation of the point of view, because in this environment, a reflexive is not syntactically allowed: The occurrence of *ku* I-implicates a coreferential interpretation as expected.

Thus the above examples show that although *caki* and *ku* appear to be in free variation on a superficial level, their semantic / pragmatic environments are still distinct: *ku* is used when there is no identification between a speaker and its referent, while *caki* is chosen when its referent's point of view is adopted by the speaker with respect to the sentence. As a result, even though the sentences where *ku* is interpreted as coreferential with a c-commanding subject are supposed to be ruled out by Q-implicature, avoiding the choice of a reflexive pronoun where there exists no identification of a speaker with its referent is pragmatically motivated and coreference is not excluded.

Things get more complicated when we note that we not only obtain a pronoun when a reflexive is expected, but we also have the occurrence of a reflexive where it is not syntactically permitted.

Observe the following data:

(40) a. [caki$_i$-ka Mary$_j$-lul ttaylyessta]-nun sasil-i John$_i$-ul
self-Nom Mary-Acc hit - fact-Nom John-Acc
koylophyessta
worried
'The fact that self$_i$ hit Mary$_j$ worried John$_i$.'

b.*[John$_i$-i Mary$_j$-lul ttaylyessta]-nun sasil-i caki$_i$-lul
John-Nom Mary-Acc hit - fact-Nom self-Acc
koylophyessta
worried
'The fact that John$_i$ hit Mary$_j$ worried self$_i$.'

(41) a. [John$_i$-uy mitum]-un [caki$_i$-ka yongkamhata]-nun kes] ita
John-Gen belief-Top self-Nom brave - is
'Speaking of John$_i$'s belief, it is that self$_i$ is brave.'

b.*[caki$_i$-uy mitum]-un [John$_i$-i yongkamhata]-nun kes ita
self-Gen belief-Top John-Nom brave - is
'Speaking of self$_i$'s belief, it is that John$_i$ is brave.'

According to the Subject Orientation Condition stated in (36), *caki* in (40a) and (41a) is not a bound anaphor, for it is not c-commanded by any subject NP. Nevertheless, coreference is not excluded. The account based on the alternation of the point of view does not help us here, due to the following data:

(42) * [Mary$_i$-ka caki$_j$-lul cohahanta]-nun somun-i John$_j$-ul
Mary-Nom self-Acc like - rumor-Nom John-Acc
yumyenghakey mantulessta
made famous
' A rumor that Mary$_i$ likes self$_j$ made John$_j$ famous.'

(43) * [caki$_i$-ka Mary$_j$-lul cwukyessta]-nun sasil-i John$_i$-ul
self-Nom Mary-Acc killed - fact-Nom John-Acc
akmyengnopkey hayssta
made notorious
'The fact that self$_i$ killed Mary$_j$ made John$_i$ notorious.'

If we assume that a speaker can take the matrix object *John* 's point of view in (40a),[23] because it is the easiest NP for a speaker to empathize with in that sentence, there being no human matrix subject NP (see Kuno 1976, Kuno and Kaburaki 1977, among others), and if we further assume that this is what is responsible for the coreferential interpretation of *John* and *caki* , we have no reason to rule out (42)-(43) as ungrammatical, since they have exactly the same structure as (40a). Close observation of the above cases, however, may reveal that there is something common to (40) and (41) which is not shared by other sentences: The former involves psychological predicates while the latter does not. *caki* can corefer to *John* when *caki* occurs in a complement that represents the internal feeling of the main clause experiencer *John* , as in (40a) and (41a): i.e., *caki* can be coreferential with a non-c-commanding, non-subject NP whose mental state or attitude is being reported (see Sells 1987). The ungrammaticality of (40b) and (41b) may then be attributed to the fact that the order of *caki* and *John* is reversed: *caki* does not occur in a complement which depicts psychological states of the experiencer. So *caki* fails to get licensed. In the case of (42) and (43), there is nothing which can save them from being ruled out, given that *caki* is not c-commanded by a subject NP, and that they do not involve psychological predicates.[24]

There is actually one more instance of *caki* which we need to take care of:

(44) a. John$_i$-un Bill$_j$-loputhe [caki$_{i/j}$-ka tayhak iphaksihem-ey
John-Top Bill-from self-Nom college entrance exam.
hapkyekhayssta]-nun iyaki-lul tulessta
passed story-Acc heard
'John$_i$ heard from Bill$_j$ that self$_{i/j}$ passed the college entrance exam.'

b. John$_i$-un Bill$_j$-eykey [caki$_{i/*j}$-ka tayhak iphaksihem-ey
John-Top Bill-to self-Nom college entrance exam
hapkyekhayssta]-nun iyaki-lul hayssta
passed story said
'John$_i$ told Bill$_j$ that self$_{i/*j}$ passed the college entrance exam.'

caki in (44a) is ambiguous between being coreferential with the c-commanding subject *John* and coreferring to *Bill* , whereas the reflexive pronoun is unambiguously coreferential with the matrix subject *John* in (44b). Coreference between the subject *John* and *caki* is not our concern here, for it is predicted by the Subject Orientation Condition. Then why is it the case that *caki* can be coreferential with *Bill* in (a), while coreference is not allowed in (b) sentence? The only difference between (a) and (b) sentences is that in (a), it is *Bill* who actually said the embedded sentence, but in (b), it is *John* who uttered it. That is, *Bill* is the source of the report in (a), but not in (b).

If it is *Bill* 's being a SOURCE OF THE REPORT that is responsible for coreference between *caki* and *Bill* in (44a), we can now factor out three semantic / pragmatic ingredients which seem to license the occurrence of the reflexive pronoun *caki* in Korean (see Sells 1987): (i) the point of view assumed by a speaker with respect to sentences, (ii) one whose internal feeling is being reported, (iii) the source of the report. In Sells (1987), it is pointed out that these three notions, which he labels PIVOT, SELF, SOURCE respectively, underlie what is called LOGOPHORICITY.

The notion of logophoricity was introduced in studies of African languages, where there are special anaphoric pronouns, called logophoric pronouns, which refer to the individual whose speech, thoughts, or feelings are reported or reflected in a given linguistic context in which the pronouns occur (Clements 1975:141); and the logophoric use of long-distance reflexive pronouns has been observed in a number of languages such as Latin, Greek, Japanese, Icelandic, etc. (Clements 1975, Kuno 1987, Sells 1987, among others).

If, as Sells (1987) claims, logophoric phenomena are a result of the interaction of the three notions Pivot, Self, Source, and if they are the semantic ingredients which license the occurrence of the reflexive pronoun *caki* in Korean as discussed above in detail, we can say that what is suggested by the use of the reflexive in Korean may be a contrast with the ordinary, non-logophoric interpretation. In other words, the meaning of *caki* has a logophoric aspect. Such being the case, the occurrence of *ku* with a coreferential interpretation where *caki* is syntactically allowed does not necessarily result in the failure of Q-implicature. In those cases, *ku* may be used in order to avoid the logophoric reading of *caki* : The choice of *ku* can Q-implicate non-logophoricity rather than a non-coreferential interpretation (see Levinson 1991 for discussion based on cross linguistic data).

Given the observation so far, we suggest that *caki* imposes two special conditions : (i) syntactically, it must be bound (i.e. coindexed and c-commanded) by a subject, and (ii) semantically, it is interpreted logophorically. *caki* does not require that both conditions be met in order for it to occur. Rather it requires a disjunction of the conditions: If one condition is met, the occurrence of *caki* is licensed, as shown with respect to the discussion of Self and Source in (40)-(44).

Therefore, the use of *ku* always implicates that *caki* could not have been used: This means either that coreference is not intended, or that its logophoric meaning is absent.

3. Our remaining task is to account for why a logophoric contrast does not arise in a minimal clause like (45):

(45) a. John$_i$-un caki$_i$-lul hyemohanta
John-Top self-Acc hate
'John$_i$ hates self$_i$.'

b. John$_i$-un ku$_{*i/j}$-lul hyemohanta
John-Top he-Acc hate
'John$_i$ hates him$_{*i/j}$.'

(46) a. John$_i$-un [nay-ka caki$_i$-lul hyemohanta]-ko sayngkakhanta
John-Top I-Nom self-Acc hate -that think
'John$_i$ thinks that I hate self$_i$'

b. John$_i$-un [nay-ka ku$_{i/j}$-lul hyemohanta]-ko sayngkakhanta
John-Top I-Nom he-Acc hate -that think
'John$_i$ thinks that I hate him$_{i/j}$.'

The use of *ku* in (45b) Q-implicates only a non-coreferential interpretation, whereas *ku* in (46b), which is bound outside the minimal clause, Q-implicates either non-coreference, or non-logophoricity. The question which immediately arises is, then, why the use of *ku* fails to allow the inference of non-logophoricity in (45b), where the pronoun is bound inside its minimal clause.

Let us compare the following data:

(47) a. John$_i$-un [caki$_i$-uy emma]-lul hyemohanta
John-Top self-Gen mom-Acc hate
'John$_i$ hates self$_i$'s mom.'

b. John$_i$-un [ku$_{i/j}$-uy emma]-lul hyemohanta
John-Top he-Gen mom-Acc hate
'John$_i$ hates his$_{i/j}$ mom.'

The above sentences particularly interest us, since the occurrence of *ku* can Q-implicate non-logophoricity even though both the antecedent and the pronoun are clausemates just like (45b). The only difference between (45b) and (47b) is that while in the former the pronoun occurs in an argument position, in the latter the pronoun occupies an adjunct position. That is, we may have a contrast in logophoricity even in the minimal clause as long as the antecedent and the pronoun are not co-arguments. Given this fact, we no longer need to assume that the meaning of *caki* has a logophoric aspect only when *caki* is bound long-distance. Rather, we can say that the absence of a logophoric contrast in the minimal clause, when the antecedent and the pronoun are co-arguments, is attributed to the fact that our pragmatic implicatures are further constrained by some principle like the Disjoint Reference Presumption (DRP), which says that the arguments of a predicate are intended to be disjoint (Farmer and Harnish 1987: 557, see also Huang 1991 for discussion). Farmer and Harnish claim that the DRP is of a pragmatic nature, without clearly explaining why it should be so. In Levinson (1991) and Huang (1991) it is convincingly argued that the DRP is pragmatic, since it is based upon world knowledge : The fact that one entity tends to act upon another entity is due largely to the way the world stereotypically is (Huang 1991: 20). The DRP formulated as above works fine for most transitive verbs. However, there is a small group of verbs, among them *shave* , *bathe* , *wash* , and *dress* , which are dubbed INTROVERTED PREDICATES by Haiman (1985:168ff), for which the DRP makes a wrong prediction. That is, verbs of this class denote actions that one usually performs on oneself, and it is this class of verbs whose reflexive object is typically expressed by zero (Haiman 1985:169):

(48) John shaved ___ .
=John shaved himself.
≠John shaved him.

But,

(49) John killed ___ .
≠John killed himself.
=John killed him.

If it is the case that co-arguments tend to be disjoint in reference, as predicted by the DRP, there is no way of accounting for the fact that the zero object of the introverted verbs are intended to be coreferential with the subject, without an extra stipulation. In other words, it seems that we face two types of preferred interpretation with opposite directions: i.e. a coreferential reading for introverted predicates, and a disjoint reference reading in the case of other transitive verbs (i.e. extroverted predicates). Given this observation, we need to modify the DRP to the extent that it only works for extroverted predicates, so that the zero object of introverted predicates will still favor a coreferential reading with a subject, although the subject and the zero object are co-arguments:

(50) Disjoint Reference Presumption (revised): The overt arguments of a predicate are intended to be disjoint.

The interaction of the DRP with other pragmatic implicatures can be presented as follows: Since our grammar allows a direct encoding of a coreferentiality by the use of a reflexive pronoun *caki* , we get coreference between *John* and *caki* in (a) sentences, the DRP being not in operation, and *caki* may be interpreted logophorically. In (45b) the use of *ku* where *caki* is allowed will Q-implicate either non-coreference or non-logophoricity. If a non-logophoric reading arises by Q-implicature, however, it will be overriden by the DRP, resulting in a non-coreferential interpretation; thus lack of a logophoric contrast in this sentence. In (46b), on the contrary, we get either non-coreference, or non-logophoricity, since *John* and the pronoun being not co-arguments, the DRP is not in operation. The pronoun *ku* occurs in an adjunct position in (47b), and either non-coreference or non-logophoricity arises by Q-implicature. If a non-logophoric reading arises, it will go through unblocked, for the DRP says nothing about adjuncts; resulting in a contrast in logophoricity.

Therefore, armed with general pragmatic implicatures and the Disjoint Reference Presumption stated in (50), which constrains the implicatures, we can now give a full account of the distribution and interpretation of Korean anaphora.

V. Concluding Remarks

In this paper, it has been argued that any theory based only on structural conditions is not adequate for the account of anaphora at least in languages like Korean. As an alternative, it has been suggested that given a grammatically specified condition for a reflexive, Subject Orientation, we can reduce the non-coreference effect through an appeal to general pragmatic principles such as the Q- and I-principles. The reflexive pronoun in Korean shows a logophoric aspect, which does not come as a surprise, *caki* being long-distance bound. Therefore, it has been claimed that *caki* requires either that it be bound by a subject, or that it be interpreted logophorically. Then the use of the non-reflexive pronoun *ku* will be warranted only if the speaker wishes to avoid coreference with a subject NP, or logophoricity, or both (see Levinson 1991:19).

It is well known that languages that have long-distance reflexives in general allow reflexives to be discourse bound. Given that Korean is a discourse-oriented language, it seems to be the case that a salient element in a discourse may end up binding discourse anaphora. However, we are not in a position to say what the nature of discourse binding of anaphora might be. Further research is warranted.

NOTES

1 By definition, anaphora includes NP-anaphora, i.e. reflexives, zero-anaphor, and pronominal anaphora. In this paper, we shall concentrate on NP-anaphora and pronominal anaphora.

2 Within the GB framework, anaphora is treated by the following conditions, i.e. the Binding Principles:
A) An anaphor is bound in its governing category.
B) A pronominal is free in its governing category.
C) R-expressions must be free.

3 Throughout this paper, *subject* refers to SUBJECT in the sense of van Riemsdijk and Williams (1986:275), which is structurally

defined as [NP, NP] or [NP, S], where [X, Y] means 'the X immediately dominated by Y'.

4 The apparent counter-examples to this condition will be discussed in section 4.2.

5 All Korean examples are transcribed using Yale Romanization.
Abbreviations include: Top—Topic marker
Nom—Nominative marker
Acc—Accusative marker
Gen—Genitive marker.

6 Here it seems that *caki* is also allowed to be coindexed with the Topic NP, *John*. However, the following sentences show that it is not Topichood which makes *John* eligible to be the antecedent of *caki*.

a. John$_i$-un Mary$_j$-lul caki$_{i/*j}$-uy ciphangi-lo ttaylyessta
John-Top Mary-Acc self -Gen stick-with hit
'John$_i$ hit Mary$_j$ with self$_{i/*j}$'s stick.'

b. John$_i$-un Mary$_j$-ka caki$_{*i/j}$-uy ciphangi-lo ttaylyessta
John-Top Mary-Nom self -Gen stick-with hit
'Speaking of John$_i$, Mary$_j$ hit him$_i$ with self$_{*i/j}$'s stick.'

Even though *John* in both (a) and (b) is the Topic of the sentence, only the Topic derived from the subject as in (a) can bind *caki*. In other words, *caki* is coindexed with *John* not because it is the Topic, but because it is the underlying subject. Thus, there is no violation of subject orientation (see Kameyama 1984:228).

7 A c-commands B if and only if the first branching node dominating A also dominates B, and A does not itself dominate B (van Riemsdijk and Williams 1986:142).

8 The reflexives across languages that obey the same anaphor-binding principle as the reciprocals, like English reflexives, will be called UNMARKED REFLEXIVES. All the reflexives across languages that are not unmarked will be called MARKED (Yang 1983:176, 178).

9 We shall not go into details of his analysis.

10 A is the c-domain of B iff A is the minimal maximal category dominating B (Manzini 1983: 422).

11 An X^0 anaphor is a non-compound anaphor which consists of a morpheme indicating SELF alone, whereas an XP anaphor is a compound anaphor which consists of a pronoun and a morpheme indicating SELF (Yang 1989: 449). An X^0 anaphor is long-distance bound and subject-oriented, but an XP anaphor is locally bound and not subject-oriented.

12 We shall get to this problem in section 4.2.

13 Not only Korean but also English has this phenomenon; e.g. picture noun reflexives: A reflexive and non-reflexive pronoun appear to be in a free variation on the syntactic level. But actually the pragmatic environments in which they occur are still distinct, confirming the assumption that reflexive and non-reflexive pronouns are in complementary distribution. This is the direction we shall explore in what follows.

14 This sentence is a result of so-called SCRAMBLING. Whatever structure we assign to this sentence, *John* is c-commanded by a pronoun, making the wrong prediction about grammaticality: i.e., a pronoun c-commanding NP should be disjoint in reference with the NP it c-commands. Therefore, we should either assume that Binding Principles are applied before scrambling takes place, or assume that Binding Principles hold of the antecedent-trace relation, trace which is left behind as a result of scrambling. The choice of one assumption over the other, however, is beyond the scope of this paper.

15 Unlike English, in Korean the reflexive *caki* can occur in a determiner position: i.e., caki-genitive is O.K. in Korean.

16 An NP is said to be bound if it is coindexed with a c-commanding NP.

17 This coreference rule is language-specific.

18 Interpretation of the non-reflexive pronoun where the reflexive cannot occur seems to be a matter of preferred interpretation (Levinson 1987: 413). This is because even though a pronoun c-commanded by an NP may be treated as a bound variable, just as a reflexive is a bound variable, sentence-level grammar has nothing to say about the interpretation of optionally coreferring pronouns

(Reinhart 1983a). Thus, we attribute this to semantics and pragmatics instead of to syntax.

19 For two linguistic expressions S and W, where S is informationally richer than W, to constitute a Horn Scale, the following constraints must be met:

(i) A(S) must entail A(W) for some arbitrary sentence frame A;
(ii) S and W must be EQUALLY LEXICALIZED (hence no Horn Scale <iff, if> to block CONDITIONAL PERFECTION).
(iii) S and W must be ABOUT THE SAME SEMANTIC RELATIONS, or from the same semantic field (hence no scale <since, and > to block CONJUNCTION BUTTRESSING (Levinson 1987: 407).

20 Levinson calls the Quantity 2 the Principle of Informativeness (the I-principle) instead of the Principle of Relevance (the R-principle), since he believes that relevance is not primarily about information - relevance is a measure of timely helpfulness with respect to interactional goals (Levinson 1987:401). The choice of one over the other, however, need not concern us here.

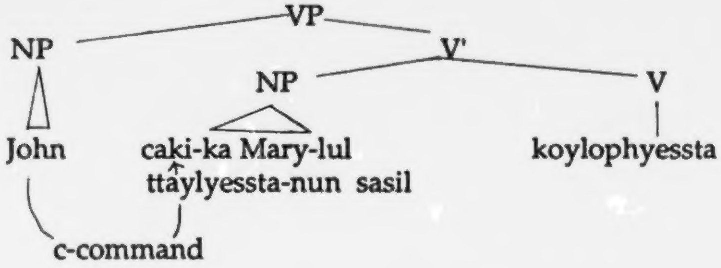
21 Our discussion is deliberately limited to reflexives and pronouns, for R-expressions in Korean are not free everywhere: i.e., The use of R-expressions does not necessarily M-implicate disjoint reference. Due to lack of data, we are not in a position to say when M-implicature can be cancelled. Further research is needed.

22 All of my informants share the intuition that *caki* is used when a speaker empathizes with its referent, conveying the meaning of RATHER THAN ANYONE ELSE. On the contrary, the use of *ku* seems to indicate that the given sentences are objective description of facts.

23 Actually we need a more refined notion of the POINT OF VIEW or EMPATHY. If it is the case that a speaker can assume any NP's point of view, regardless of the type of predicates, according to the Surface Structure Empathy Hierarchy proposed in Kuno (1976) and in Kuno and Kaburaki (1977), we have no reason to mark (42) and (43) as ungrammatical, because it can be argued that the highest NP in terms of the hierarchy is empathized with, so *caki* can be coreferential with an empathized-with NP *John* in these cases. If *caki* requires a conjunction of the Subject Orientation Condition and the logophoric

aspect (to which we shall turn shortly), there arises no problem here, given that *caki* in (42) and (43) is not bound by a subject. But *caki* seems to require a disjunction of them, as will be illustrated in what follows. Therefore, we need to say that a speaker can take the subject's point of view only, unless given sentences involve psychological predicates or a source of the report (which will be discussed below), so as to allow the speaker to take the point of view of the person who is the source of the report or whose mental state is being reported. Further research on this issue is needed.

24 An anonymous reviewer comments that the possibilities of a syntactic basis for a treatment of anaphor-binding in psych verb constructions have not been exhausted. For example, following Belletti and Rizzi (1988: 312-313), we can argue that in a sentence like (40a) the experiencer in object position can bind an anaphor contained within the subject because the c-command requirement on the antecedent-anaphor relation is met in the D-structure representation which has the following form (see Belleti and Rizzi 1988 for a detailed discussion):



The ungrammaticality of (40b) would then be expected, for the c-command requirement on the antecedent-anaphor relation is not met at any level of representation. But we still need to account for why the Subject Orientation Condition is not respected in these cases.

25 Chomsky (1986a) proposes the relativization of the governing category as follows:

> A governing category is a complete functional complex (CFC) in the sense that all grammatical functions compatible with its head are realized in it - the complements necessarily, by the projection principle, and the subject, which is optional unless required to license a predicate, by definition ... the relevant governing category for an expression @ is the least CFC containing a

> governor of @ in which @ could satisfy the binding theory with some indexing (perhaps not the actual indexing of the expression under investigation) (Chomsky 1986a: 169-171).

Thus, the clause is the relevant governing category for the anaphor in (47a), whereas the NP *ku-uy emma* 'his mom' is the relevant governing category for the pronoun in (47b). Under this version of binding theory, the fact that both the anaphor *caki* and the pronoun *ku* can be bound by the subject *John* in (47) is readily explained. (I am indebted to an anonymous reviewer for this observation.) This account, however, does not extend to the cases where the anaphor and the pronoun are not in complementary distribution although the relevant governing category for them is exactly the same.

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A Study of Quantifier Phrases in Thai

Phawadee Deephuengton

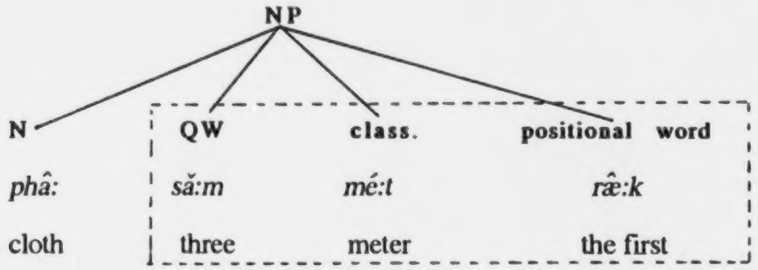
Abstract: The structures of quantifier phrases in Thai are studied in the X -Syntax framework (Jackendoff 1977). Syntactic and Semantic arguments are provided to prove that this model remedies the deficiency of traditional and early transformational grammar as it provides insightful analyses based on distinctions between intermediate level nodes which display internal hierarchical structures as well as the linear structure of the phrase. In addition, this leads to an account of the different meanings of the structure itself.

A quantifier phrase in Thai always has a noun as its first element.

(1) [$_{NP}$ *phâ:* *sǎ:m* *mé:t* *rǽ:k*]$_{NP}$
cloth three class. the first

the first three meters of cloth

The quantifier phrase is somehow embedded in the NP. We cannot yet classify the constituents within this NP because we have to provide arguments for it whether syntactic or semantic. However, if we attempt to diagram the NP in (1) as follows:



the first three meters of cloth

we will encounter a number of immediate problems, i. e., this model provides only the most meager structural framework for the syntactic units. Quite clearly, we cannot suspend all the constituents in (1) from the same node. Such an analysis ignores the fact that the NP has internal hierarchical structure as well as a linear structure which can account for potentially different meanings of the structure itself

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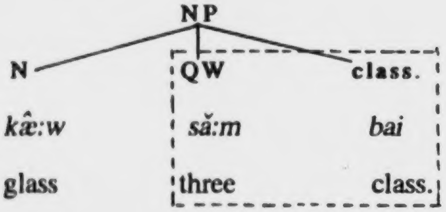
because one might argue that this NP may mean 'the three first meters of cloth' or 'three meters of the first cloth,' etc. rather than 'the first three meters of cloth.'

To see this clearly, consider the quantifier phrase in (2a) and its associated diagram (2b) provided by the phrase structure rule.

(2) a. *kæ̂:w* *sǎ:m* *bai*
glass three class.

three glasses

b.



three glasses

Empirical arguments to support the position that the quantifier phrase is embedded and attached at a different level within the NP are provided by using standard constituent structure 'tests': deletion, substitution, and conjunction.

(3) a. *dæ:ŋ* *mi:* *kæ̂:w* *sǎ:m* *bai*
Dang have glass three class.

Dang has three glasses.

b. *dæ:ŋ* *mi:* *kæ̂:w* *thâurai*
Dang have glass how many

How many glasses does Dang have?

c. *dæ:ŋ* *mi:* **e** *sǎ:m* *bai*
Dang have three class.

Dang has three.

In (3b) *sǎ:m bai* can be substituted for *thâurai* in response to questions, and in (3c) which is the answer to (3b) the word *kæ̂:w* (glass) has been left out as the understood constituent (**e**). *sǎ:m bai* can occur alone without its head noun *kæ̂:w*.

This proves that *să:m bai* constitutes a constituent. It is an 'internal unit' within its own phrase (NP): *kæ̂:w să:m bai*

(4)	a.	*dæ:ŋ*	*mi:*	*kæ̂:w*	*să:m*	*bai*
		Dang	have	glass	three	class.

Dang has three glasses.

b.	*dam*	*kɔ̂:*	*mi:*	*e*	*să:m*	*bai*
	Dam	also	have		three	class.

Dam also has three.

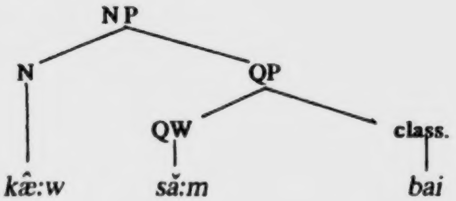
c.	**dam*	*kɔ̂:*	*mi:*	*e*	*să:m*	*phɨ̌:n*
	Dam	also	have		three	class.

Dam also has three.

(4c) shows additional evidence that *kæ̂:w* has been deleted from the NP due to the ungrammaticality of the sentence. *phɨ̌:n* is the classifier used with *sɨǎ* (mat). The native speaker intuitively knows that the deleted unit is *kæ̂:w* (glass) not *sɨa* (mat). If *phɨ̌:n* is unacceptable in (4c), it clarifies the point that there is something deleted or else every classifier could be used in this slot without making the sentence unacceptable. This can be accounted for by a co-occurrence restriction, i. e., the head noun in NP selects its classifier; for instance, *kæ̂:w* selects *bai, sɨa* selects *phɨ̌:n* etc.

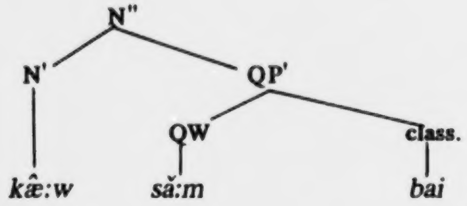
From the arguments proposed, we may tentatively claim that the NP *kæ̂:w să:m bai* has the structure below:

(5)



This diagrammatic representation in (5) has not yet clearly displayed how the constituents are attached at the different levels as to show larger phrasal expansions of a given head constituent. I adopt the system of X'-Syntax to label the different level attachments as follows:

(6)



In (6) *kæ̂:w* is under N' node because it is a head noun and its projection to N" denotes the larger phrasal expansion. QP' modifies N', thus it attaches to the N" node and expands the scope of N' into N" which corresponds to the traditional category of NP.

Another syntactic argument to support that *kæ̂:w* of N' is definitely separated from QP' can be seen from the evidence in (7).

(7) a.

kæ̂:w	*aŋkrìt*	*sǎ:m*	*bai*
glass	English	three	class.

three English glasses

b.

dæ:ŋ	*mi:*	*kx̂:w*	*aŋkrìt*	*thâurai*
Dang	have	glass	English	how many

How many English glasses does Dang have?

c.

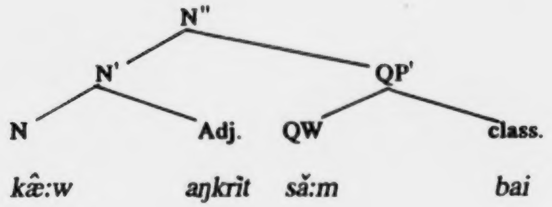
dæ:ŋ	*mi:*	*e*	*sǎ:m*	*bai*
Dang	have		three	class.

Dang has three.

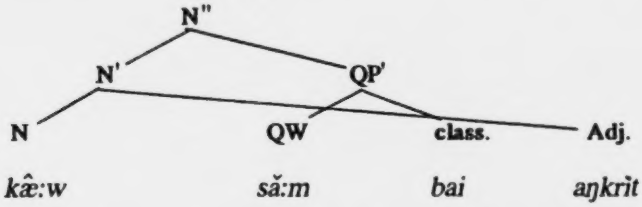
d. **dæ:ŋ* *mi:* *e* *sǎ:m* *bai* *aŋkrìt*

(7c) shows that the whole chunk of *kæ̂:w aŋkrìt* can be deleted. This means that *aŋkrìt* goes together with N *kæ̂:w* not QP' *sǎ:m bai*. That is why when we move the element *aŋkrìt* and attach it with QP' *sǎ:m bai* in (7d), the sentence becomes unacceptable. Moreover, it is even clearer to see the evidence in the diagrammatic structure in (8) and (9).

(8)


N"
N'
QP'
N
Adj.
QW
class.
kæ̂:w
aŋkrit
sǎ:m
bai

(9)


N"
N'
QP'
N
QW
class.
Adj.
kæ̂:w
sǎ:m
bai
aŋkrit

(8) is the structure associated with (7a). (9) is ruled out because it violates the 'no crossing of branches' restriction. (8) contains no crossing branches, and thus is well-formed. This argument strongly supports placing *kæ̂:w* at the N' level and *sǎ:m bai* of the QP' at the N" level.

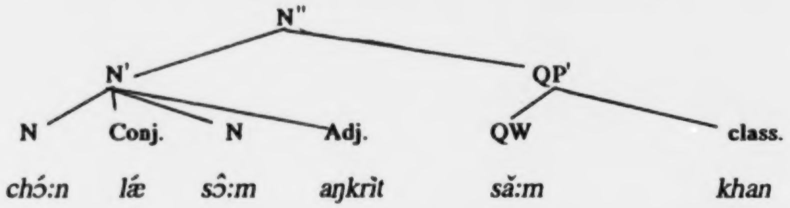
A further argument to support the prediction about the different nodes of N' and N" can be captured by using the conjunction test.

(10) *dæ:ŋ mi: chɔ̂:n lǽ sɔ̂:m aŋkrit sǎ:m khan*
Dang have spoon and fork English three class.

Dang has three English spoons and forks.

In (10) the noun *chɔ̂:n* (spoon) and *sɔ̂:m* (fork) select the same classifier *khan* so they can be conjoined under the same node as displayed in the tree diagram (11).

(11)


N"
N'
QP'
N
Conj.
N
Adj.
QW
class.
chɔ̂:n
lǽ
sɔ̂:m
aŋkrit
sǎ:m
khan

On the other hand, if the nouns do not select the same classifier, they cannot be conjoined under the same node. Let's look at the structure in (12) and its associated diagram (13) to elucidate the point.

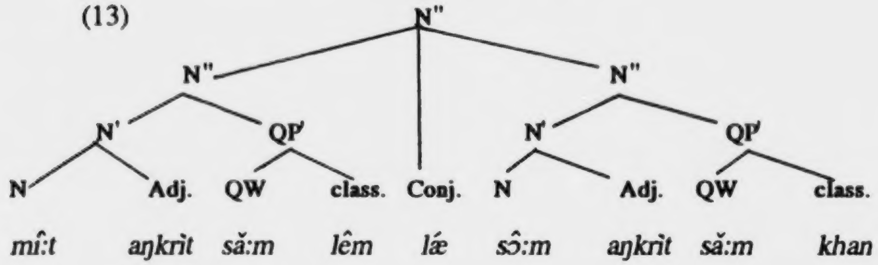
(12)

dæ:ŋ	*mi:*	*mî:t*	*aŋkrìt*	*sǎ:m*	*lêm*
Dang	have	knife	English	three	class.

lǽ	*sɔ̂:m*	*aŋkrìt*	*sǎ:m*	*khan*
and	fork	English	three	class.

Dang has three English knives and forks.

(13)


N"
N"
N"
N'
QP'
N'
QP'
N
Adj.
QW
class.
Conj.
N
Adj.
QW
class.
mî:t
aŋkrìt
sǎ:m
lêm
lǽ
sɔ̂:m
aŋkrìt
sǎ:m
khan

From (13), we can see that if the nouns do not select the same classifier, there will be a repetition of the N". The super N-double-prime has to be proposed in this case.

The data of the quantifier phrases I have provided so far is not exhaustive. As a matter of fact, there can be more elements attached within the quantifier phrase. I categorize all the elements that can occur within the quantifier phrase in the following table.

Syntactic functions	Quantification premodifiers				Head	Quantification postmodifier		
Types of words	Preadv.	Degree word	QW	DW	Classifier	Residual word	Seminumeral	Postadv.
Examples	ʔi:k 'again'	sàk khæ̀: phiaŋ 'just'	1-9	sìp 'the tenth'	bai 'classifier for glass'	kwà: 'plus'	rǽ:k 'the first'	thâunán 'only'
		chìat jìap kìap rûam 'almost'	krîŋ 'half'	rɔ́:i 'the hundreds'	phɨ̌n 'classifier for mat'	krìŋ 'half'	thí:nɨŋ	phɔ:di: 'exact amount'
		náp thɨ̌ŋ ruam 'up to'	khɔ̂:n 'three fourth'	phan 'the thousands'	lêm 'classifier for knife'	sè:t 'residue'	sutthá:i 'the last'	thûan 'exact'
		thúk tháŋ 'all, every'	bâ:ŋ 'certain'	mɨn 'the ten thousands'	khan 'classifier for spoon'			
		kɔ:n 'more than'	la:i 'many, much'	sɛ̌:n 'the hundred thousands'				
			pràma:n 'about'	lá:n 'the millions'				

QW = Quantity word

DW = Digital word

At this point, I claim that the classifier functions as the head of the quantifier phrase. The argument to support this claim is as follows:

(14)	a.	*dæ:ŋ*	*mi:*	*kæ̂:w*	*tháurai*
		Dang	have	glass	how many

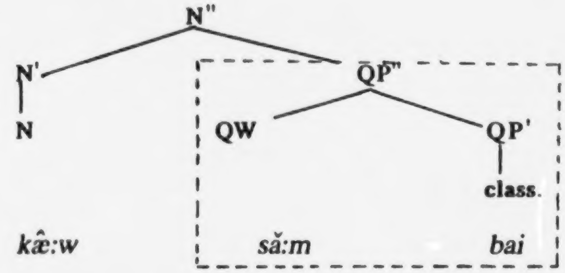
How many glasses does Dang have?

b. *dæ:ŋ* *mi:* *kæ̂:w* *e* *bai*
Dang have glass class.

Dang has one.

In (14b), which is the answer to (14a), the classifier *bai* substitutes for *thâurai.* The quantity word (cardinal) can be deleted. We have already shown that N *kæ̂:w* is a separate node from the QP' from the previous argument. Now, we are going to concentrate only on the QP' (e *bai*). Since the quantity word can be deleted, it is obvious that there must be some internal structure within the QP itself. Nonetheless, note that the cardinal deleted here is only the number 'one.' When the QP is expressed only with the classifier, the number of objects perceived intuitively by the native speaker is only 'one.' As far as the evidence is expressed, we may have to re-diagram the structure as follows:

(15)



In (15) *bai* is the head of the quantity phrase under QP' and its projection to QP" denotes the larger phrasal expansion. QW modifies QP', thus it comes off QP" node and expands the scope of QP' into QP" which corresponds to the category QP.

I will see how the elements of the quantifier phrase get attached to the head of the quantifier phrase.

(16) *kæ̂:w* *khɤ̂:* *sǎ:m* *bai*
glass just three class.

just three glasses

We do not know how *khæ̂:* gets attached to *sǎ:m bai.* The way to proceed is to try a constituent structure test.

(17) a. *dæ:ŋ mi: kæ̂:w khæ̂: sǎ:m bai*
Dang have glass just three class.

Dang has just three glasses.

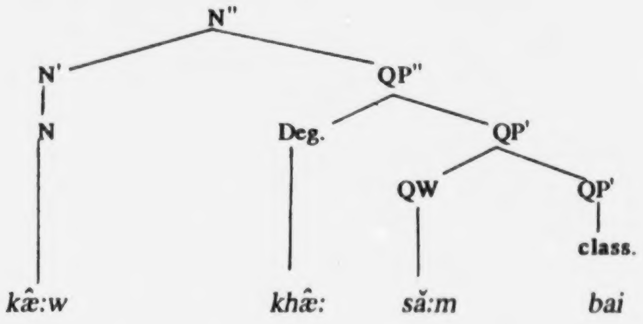
b. *dæ:ŋ mi: khæ̂: thâurai ná* (echo question)
Dang have just how many particle

Dang has just how many?

c. *dæ:ŋ mi: e sǎ:m bai*

The native speaker's perception of the answer to an echo question[4] and a common question is quite different. (17c) is an answer to the echo question (17b) in which the native will perceive the missing element as *khæ̂:* (cf. a common question in (3b) and its associated answer (3c). This proves that *khæ̂:* must be attached to another level as follows from the previous deletion test so far. The following tree diagram represents the structure for *kæ̂:w khæ̂: sǎ:m bai*

(18)



(19) *kæ̂:w ʔi:k khæ̂: sǎ:m bai*
glass again just three class.

just three more glasses

In (19), again, we will find the argument where *ʔi:k* is attached to by using the same test.

(20) a. *dæ:ŋ mi: kæ̂:w ʔì:k khæ̂: sǎ:m bai*
Dang have glass again just three class.

Dang has just three more glasses.

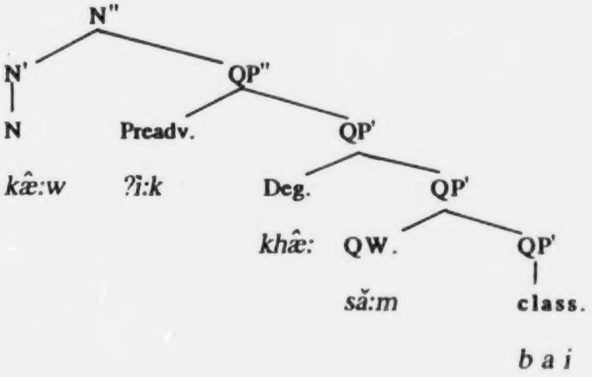
b. *dæ:ŋ mi: ʔi:̀k khæ̂: thâurai ná* (echo question)
Dang have again just how many particle

Dang has just how many more?

c. *dæ:ŋ mi: e khæ̂: sǎ:m bai*

In (20c), the deleted element is perceived as *ʔì:k*. Consequently, *ʔì:k* must be attached to another level within the phrase. Nonetheless, we might notice that *sǎ:m, khx̂:, ʔì:k* have the same function within the phrase, i. e., they modify the head classifier. Moreover, they are optional elements and recursive. (21) represents (19).

(21)



(22) *kæ̂:w sǎ:m bai thâunán*
glass three class. only

only three glasses

In (22), *thâunán* occurs after the head classifier. We still have to adopt the same test to see how *thâunán* interacts within the QP.

(23) a. *dæ:ŋ mi: kæ̂:w sǎ:m bai thâunán*
Dang have glass three class. only

Dang has only three glasses.

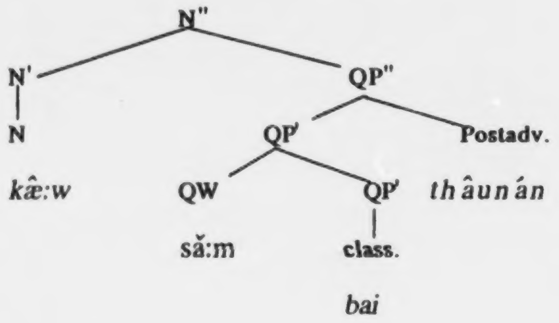
b. *dæ:ŋ mi: kì: bai thâunán ná* (echo question)
Dang have how many class. only participle

Dang has how many only?

c. *dæ:ŋ mi: să:m bai* e

In the same fashion, the deleted element in (23c) is understood as *thâunán* So it must be attached at another level. The only difference from *ʔi:k* , and *khâe:* is that it is postmodifier.

(24)



(24) represents the diagrammatic structure of (22).

(25) *kâe:w khâe: să:m bai thâunán*
glass just three class. only

just only three glasses

(26) *kâe:w ʔi:k khâe: să:m bai thâunán*
glass again just three class. only

just only three more glasses

From (25) and (26), we will use the same deletion test and put them in the tree diagrams.

(27) a. *dæ:ŋ mi: kâe:w khâe: să:m bai thâunán*
Dang have glass just three class. only

Dang has just only three glasses.

b. *dæ:ŋ mi: khâ̂æ: kì: bai thâunán ná* (echo question)
Dang have just how class. only particle
many

Dang has just how many only?

c. *dæ:ŋ mi: khâ̂æ: sǎ:m bai*

(28) a. *dæ:ŋ mi: kâ̂æ:w ʔi:k khâ̂æ: sǎ:m bai thâunán*
Dang have glass again just three class. only

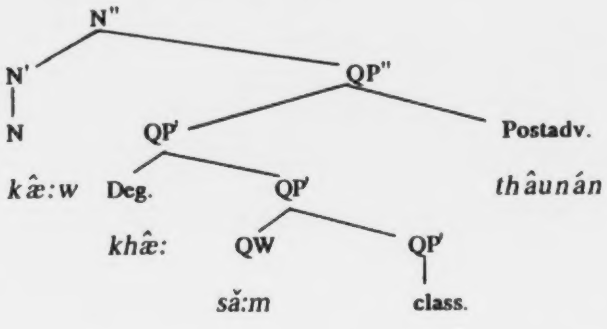
Dang has just only three more glasses.

b. *dæ:ŋ mi: ʔi:k khâ̂æ: kì: bai thâunán ná* (echo question)
Dang have again just how class.only particle

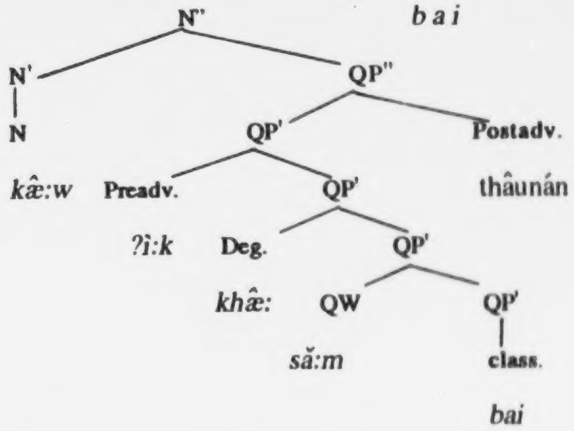
Dang has just only how many more?

c. *dæ:ŋ mi: ʔi:k khâ̂æ: sǎ:m bai* e

(29)


N"
N'
N
QP"
QP'
Postadv.
kâ̂æ:w
Deg.
QP'
thâunán
khâ̂æ:
QW
QP'
sǎ:m
class.
b a i

(30)


N"
N'
N
QP"
QP'
Postadv.
kâ̂æ:w
Preadv.
QP'
thâunán
ʔi:k
Deg.
QP'
khâ̂æ:
QW
QP'
sǎ:m
class.
bai

(29) and (30) represent (25) and (26) respectively. It is needless to repeat the same explanation as to how *thâunán* is attached within the QP. But the obvious evidence that supports why the postadverb comes off the QP" and modifies the whole chunk of *să:m bai, khæ̂: să:m bai,* and *ʔì:k khæ̂: să:m bai* underscored in (23c), (27c), and (28c) respectively, is that we have to repeat every element before the empty element *thâunán.*

(31) *phâ: sìp mé:t kwà:*
cloth ten class. plus

ten meters of cloth plus

In (31), *kwà:* is one of the postmodifiers and acts the same way as *thâunán*.

(32) a. *dæ:ŋ mi: phâ: sìp mé:t kwà:*
Dang have cloth ten class. plus

Dang has ten meters of cloth plus.

b. *dæ:ŋ mi: kì: mé:t kwà: ná* (echo question)
Dang have how many class. plus particle

Dang has how many plus?

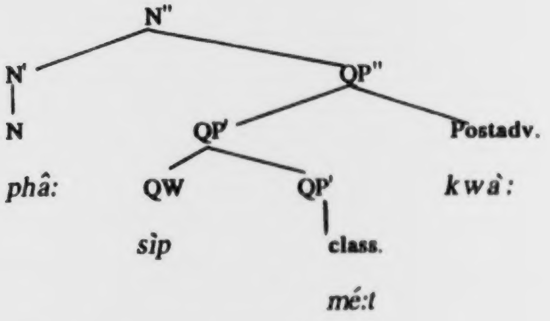
c. *dæ:ŋ mi: sìp mé:t* e

If we attach *khæ̂:* and *ʔì:k khæ̂:* to (31) and go through the deletion test we will get:

(33) a. *dæ:ŋ mi: khæ̂: sìp mé:t* e

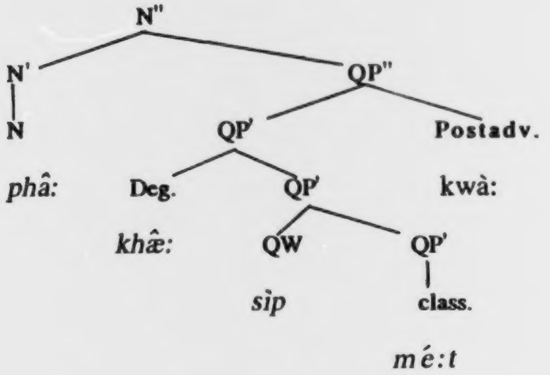
b. *dæ:ŋ mi: ʔì:k khæ̂: sìp mé:t*

(34)

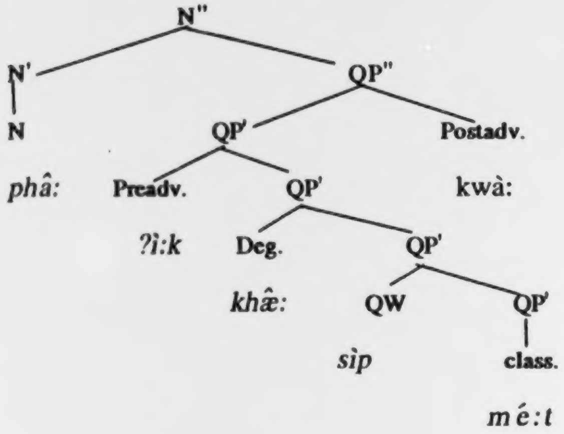

N"
N'
N
QP"
QP'
Postadv.
phâ:
QW
QP'
kwà:
sìp
class.
mé:t

phâ: sìp mé:t kwà:

(35)


N"
N'
N
QP"
QP'
Postadv.
phâ:
Deg.
QP'
kwà:
khæ̂:
QW
QP'
sìp
class.
mé:t

(36)


N"
N'
N
QP"
QP'
Postadv.
phâ:
Preadv.
QP'
kwà:
ʔì:k
Deg.
QP'
khæ̂:
QW
QP'
sìp
class.
mé:t

phâ: ʔì:k khæ̂: sìp mé:t kwà:

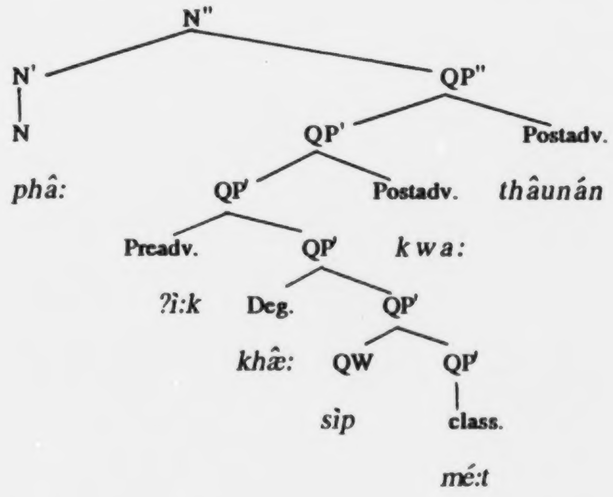
We know that the postadverb *kwà:* attaches to the QP" and modifies the whole QP' *ʔi:k khâe: sìp mé:t* from the evidence in (32c), (33a), and (33b) such that we have to repeat every element before the empty element *kwà:*.

(37) *phâ: ʔi:k khâe: sìp mé:t kwà: thâunán*
cloth again just ten class. plus only

only just ten more meters of cloth plus

(37) represents the quantifier phrase which contains the most elements. (38) is its associated diagrammatic representation.

(38)



The argument to support placing *thâunán* in the outermost layer of the quantifier phrase is from the evidence in (39) below:

(39) a. *dæ:ŋ mi: phâ: ʔi:k khâe: sìp mé:t kwà: thâunán*
Dang have cloth again just ten class. plus only

Dang has only just ten more meters of cloth plus.

b. *dæ:ŋ mi: ʔi:k khâe: kì: mé:t kwà: thâunán* (echo question)
Dang have again just how class. plus only particle
many

Dang has only just how many plus?

c. *dæ:ŋ mi: ʔi:k khæ̂: sìp mé:t kwà:* e
Dang have again just ten class. plus

Dang has just ten plus.

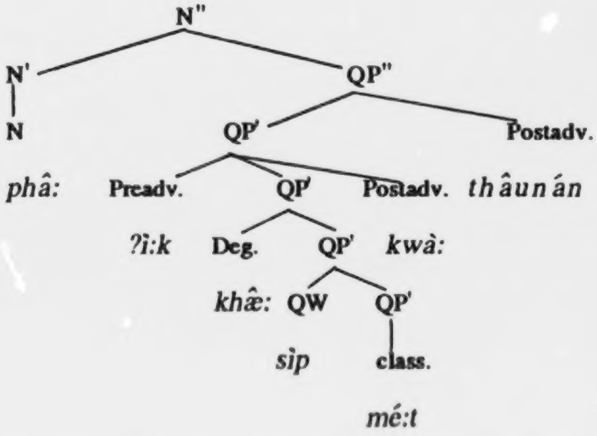
In (39c), we have to repeat every element before the empty element *thâunán*. Hence, *thâunán* is the outermost layer of the QP. Moreover, There are no phrase like (40) which is additional evidence to prove the status of *thâunán*.

(40) **phâ: sìp mé:t thâunán kwà:*
cloth ten class. only plus

If we use brackets to show the constituents, it goes as follows:

(41) [*phâ:* [[[*ʔi:k* [*khæ̂:* [*sìp* [*mé:t*]]]] *kwà:*]*thâunán*]]
NP NP

(4 1) a.



(41a) is the modified tree diagram from (38). The reason why the postadverb *kwà:* attaches to QP' is that *kwà:* modifies the whole chunk of *ʔi:k khæ̂: sìp mé:t* as already been proven earlier. The postadverb *thâunán*, proven as the outermost layer of the QP, attaches to QP", denoting the larger phrasal expansion. It modifies the whole chunk of *ʔi:k khæ̂: sìp mé:t kwà:*.

A further semantic argument to support that *kwà:* and *thâunán* are postmodifiers of the quantifier phrase is from the restriction of the question word used with these two elements in the echo question test frame. We have to use *kì:*

(how many) + classifier (accorded with the given noun) with postadverbs *kwà:* and *thâunán*. On the other hand, with premodifiers: Preadverb, Degree word, QW, we have to use the question word *thâurai*. *thâurai* includes a semantic notion of general classifier.

(42) *dæ:ŋ mi: mî:t lǽ sɔ̂:m thâurai*
Dang have knife and fork how many

How many knives and forks does Dang have?

(43) **dæ:ŋ mi: mî:t lǽ sɔ̂:m kì: khan*
Dang have knife and fork how many class.

How many knives and fork does Dang have?

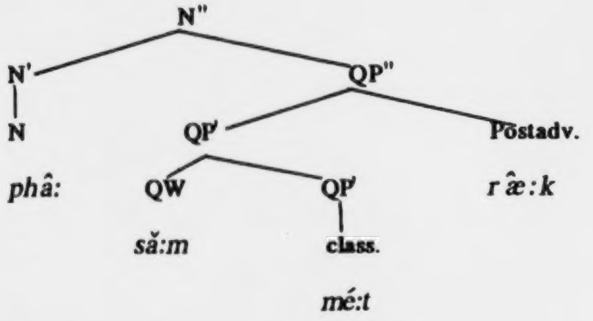
In (42), *mî:t* and *sɔ̂:m* do not select the same classifier. *mî:t* selects *lêm* while *sɔ̂:m* selects *khan*. However, we can use *thâurai* to make a question form. In addition, the ungrammaticality of (43) helps prove that *thâurai* has the semantic notion of a general classifier because we cannot use '*kì:* + classifier' the same way as *thâurai*. Unlike *thâurai*, *kì:* must be used with a specific classifier according to its selectional restrictions.

We can now address the problem proposed at the beginning of how we know the meaning of the quantifier phrase:

(44) *phâ: sǎ:m mé:t rîe:k*
cloth three class. the first

is 'the first three meters of cloth' rather than 'the three first meters of cloth' or 'three meters of the first cloth.' We have already been provided with the syntactic arguments for the different levels of attachment for the QP. A further argument in support of this is of a semantic nature.

(45)



In (45), *să:m* is closely linked to its head classifier and they have already been proven to be in the same constituent. The internal hierarchical structure tells us that the constituent [*să:m* [*mé:t*]] is embedded in the constituent [[*să:m* [*mé:t*]] *ræ̂:k*]. *să:m* modifies *mé:t* and *ræ̂:k* modifies the whole constituent of *să:m mé:t*. Thus, we obtain the first reading as the correct one.

(46) *phâ: mé:t nìŋ*
cloth class. one

one meter of cloth

(46) is one of the few quantifier phrases that have reversed the order of cardinal and classifier. As a matter of fact, in Thai, the word order is generally fixed. Moreover, the only cardinal number that can occur in this position is *nìŋ* (one). There is no quantifier phrase in Thai like (47).

(47) **phâ: mé:t să:m*
cloth class. three

three meters of cloth

The reversed order of classifier + cardinal can occur in more complicated QP as follows:

(48) a. *phâ: mé:t nìŋ*

b. *phâ: mé:t nìŋ thâunan*

c. *phâ: khæ̂: mé:t nìŋ*

d. *phâ: khæ̂: mé:t nìŋ thâunan*

e. *phâ: ʔi:k khæ̂: mé:t nìŋ*

f. *phâ: ʔi:k khæ̂: mé:t nìŋ thâunan*

nìŋ is moved across the classifier but not across the postadverb *thâunán* and *kwà:*, and also not across the premodifiers *ʔi:k* and *khæ̂:*

(49) a. **phâ: mé:t kwà: nìŋ*

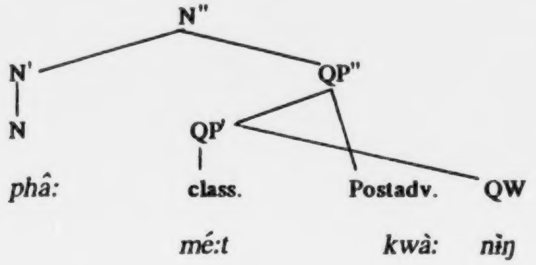
b. **phâ: mé:t thâunán nìŋ*

c. **phâ: nìŋ ʔi:k mé:t*

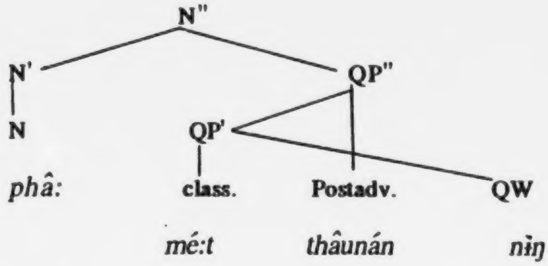
d. **phâ: nìŋ khæ̂: mé:t*

The evidence from (49a, b, c, d) proves that *nìŋ* can move only within its own internal structure and this also supports the argument that each element has its own level of attachment.

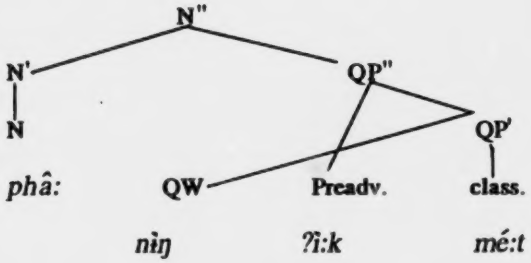
(50) a.


N"
N'
QP"
N
QP'
phâ:
class.
Postadv.
QW
mé:t
kwà:
nìŋ

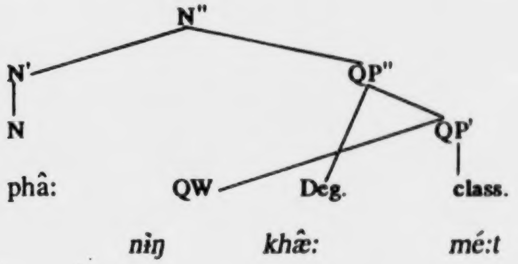
b.


N"
N'
QP"
N
QP'
phâ:
class.
Postadv.
QW
mé:t
thâunán
nìŋ

c.


N"
N'
N
QP"
QP'
phâ:
QW
Preadv.
class.
nìŋ
ʔi:k
mé:t

d.


N"
N'
N
QP"
QP'
phâ:
QW
Deg.
class.
nìŋ
khǣ:
mé:t

(50 a, b, c, d) show that the movement of nìŋ violates the ‘no crossing of branches’ restriction. Thus they all are ruled out.

The transformational rule that can account for the structure of classifier + cardinal is ‘*nìŋ* Movement.’’

‘ nìŋ Movement’ (optional)

S.D:	x	*nìŋ*	classifier	y
	1	2	3	4
S.C:	1	0	3+2	4

This is a local transformation, for, the movement only occurs between adjacent constituents (local node).

The movement of *nìŋ* across the classifier node gives rise to some phrasal structures that need to pass a semantic filter.

(51)	**phâ:*	*mé:t*	*nìŋ*	*kwà:*
	cloth	class.	one	plus

a meter of cloth plus

(52) *phâ: mé:t kwà:*
cloth class. plus

a meter of cloth plus

(53) **phâ: mé:t nìŋ ræ̂:k*
cloth class. one the first

the first meter of cloth

(54) *phâ: mé:t ræ̂:k*
cloth class. the first

the first meter of cloth

When *nìŋ* is moved across the classifier node and followed by the postmodifier *kwà:* and *ræ̂:k*, *nìŋ* must be deleted. But the empty element is still perceived as *nìŋ* by the native speakers. This is because *kwà:* and *ræ̂:k* always semantically contain the notion of 'singularity.' *nìŋ* is a part of their meaning so their combination with *nìŋ* will be redundant. These two words act as a semantic filter to rule out quantifier phrases like (51) and (53).

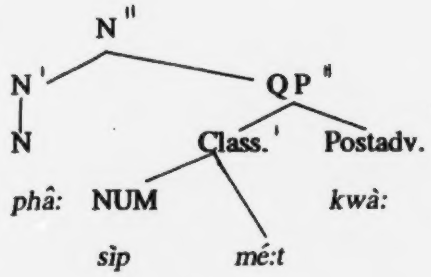
The *nìŋ* that appears after the classifier can also be viewed as a postmodifier. (51) and (53) are ungrammatical because all three postmodifiers *nìŋ*, *kwà:*, *ræ̂:k* can only appear in a single postmodifier position. This is a case where one lexical item can have two functions but still carries the same meaning. So both cardinal *nìŋ* and postmodifier *nìŋ* are derived from the phrase structure rule. Thus, there is no need for a transformational rule if the phrase is analyzed in this way.

There are still some quantifier phrases in which the different word orders create differences in meaning.

(55) *phâ: sìp mé:t kwà:*
cloth ten class. plus

ten meters of cloth plus
(a little bit more than ten but not eleven)

(55) a.

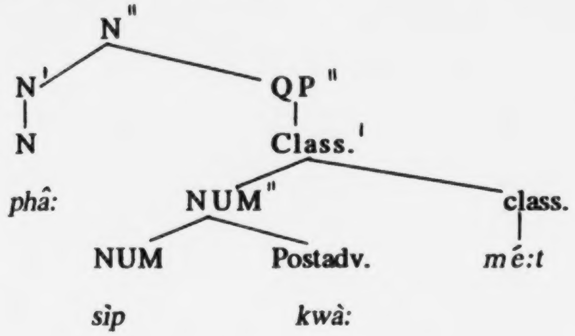


(56)

phâ:	*sìp*	*kwà:*	*mé:t*
cloth	ten	plus	class.

ten meters of cloth plus.
(up to nineteen but not twenty)

(56) a.



(55) and (56) have different meanings as mentioned above. (55) has its meaning as such because *kwà:* expresses the meaning of 'plus 1 unit.' This is why the meaning perceived by the native speaker is a bit more than the number given but not up to the following number; for instance, if the given number is '10' then '10 plus' in this situation is equal to 10 + .01-.99 but not 11. In this case, the focus is on the classifier *mé:t*. Every cardinal can occur before the classifier in this phrasal structure. On the other hand, (56) has its meaning as ten meters of cloth plus (up to nineteen but not twenty). The important fact in this structure is that the only cardinals that can occur before the classifier are digital words as in (57).

(57) *phâ:* *sìp* *kwà:* *mé:t*
cloth ten plus class.

rɔ́:j
'hundred'

phan
'thousand'

mɨ̀n
'ten thousand'

sǽ:n
'hundred thousand'

lá:n
'million'

There are no phrase like (58)

(58) **phâ:* *sǎ:m* *kwà:* *mé:t*
cloth three plus class.

Since not every cardinal can occur in the phrasal structure like (57), there must be a difference in meaning between (55) and (56). As a matter of fact, we can provide an explanation by using a semantic argument. (56) means ten meters of cloth plus (up to nineteen but not twenty): 10 + 1-9.99 but not 20 and if the number is 100, the plus number is 1-99.99 not 200 etc. In this case, the focus is on the cardinal (all the digital words). These two examples demonstrate the subtle range of meanings created by the different word orders. As far as the evidence goes, they are more or less accounted for by the constituent structures.

There are still some more interesting facts about numbers in QP. Thai uses the decimal system for numbers.

(59) *sìp* = 10
'ten'

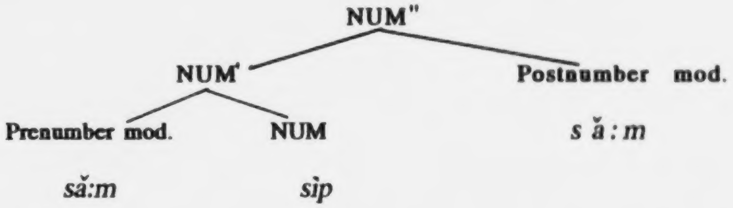
(60) *sǎ:m sìp* = 30: (3x10)
'three ten'

(61) *sìp sǎ:m* = 13: (10+3)
'ten three'

(62) *sǎ:m sìp sǎ:m* = 33: [(3x10)+3]
'three ten three'

(60) and (61) have structural difference between the prenumber and postnumber modifiers. The prenumber expresses 'multiplication,' but the postnumber modifier expresses 'addition.'

(63)



In (63), the number phrase has been proposed. The evidence that *sǎ:m* (postnumber modifier) attaches to the upper level node (NUM") is that logically the operation of multiplication precedes the operation of addition. If the operations were performed in the opposite order, the result would be 39 rather than 33. The number phrase is the most internal structure within the QP. It modifies the head classifier. Clearly enough, this answers why we have a difference in meaning between *sǎ:m sìp kwà: mé:t* and *sǎ:m sìp mé:t kwà:*.

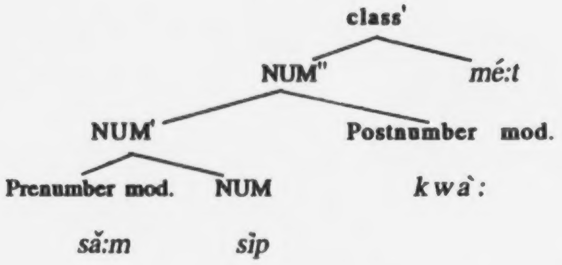
(64) *sǎ:m sìp kwà: mé:t*
three ten plus class.

thirty plus (up to thirty nine but not forty)

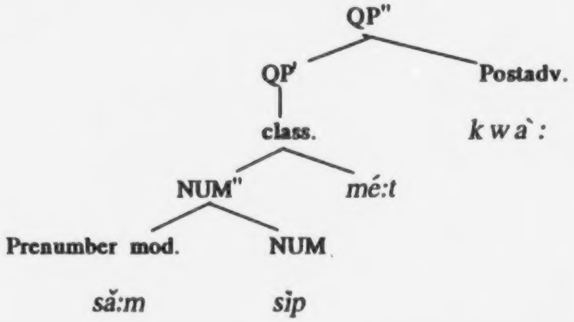
(65) *sǎ:m sìp mé:t kwà:*
three ten class. plus

thirty plus (a little bit more than thirty but not up to thirty one)

(66)


class'
NUM"
mé:t
NUM'
Postnumber mod.
Prenumber mod.
NUM
kwà:
sǎ:m
sìp

(67)


QP"
QP'
Postadv.
class.
kwà:
NUM"
mé:t
Prenumber mod.
NUM
sǎ:m
sìp

(66) and (67) are the associated phrase markers of (64) and (65) respectively. In (66), the number phrase modifies the head classifier *mé:t.* *kwà:* becomes postnumber modifier modifying *sǎ:m sìp* in the very internal structure of QP, but in (67) *kwà:* is postadverb (QP") modifying *sǎ:m sìp mé:t* in QP'.

(68) **sǎ:m sìp sǎ:m kwà: mé:t*

(68) is unacceptable because there is a restriction on the postnumber modifier. There is only one place in the phrase marker for the element. We have to choose between lexical items *kwà:* and the cardinal numbers.

prenumber modifier + number + postnumber modifier

$$\begin{bmatrix} \text{sǎ:m} \\ \text{kwà:} \end{bmatrix}$$

(69) *sǎ:m sìp sǎ:m mé:t kwà:*
three ten three class. plus

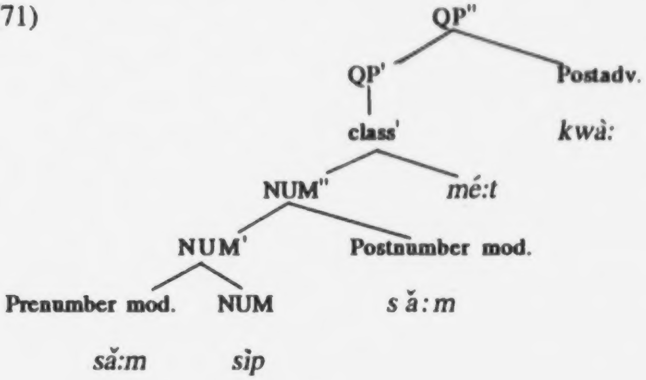
thirty three meters plus

(69) is well-formed because *sǎ:m* is chosen to fill the postnumber modifier instead of occurring together with *kwà:* which leads to the unacceptability of (70)

(70) **sǎ:m sìp* *sǎ:m kwà:* *mé:t*
three ten three plus class.

The phrase marker of (69) is displayed in (71).

(71)



Now we can include the number phrase which is the very internal structure within QP and makes the most complicated QPs as follows:

(72) *phâ: ʔì:k khæ̂: sǎ:m sìp sǎ:m mé:t kwà: thâunán*
cloth again just three ten three class. plus only

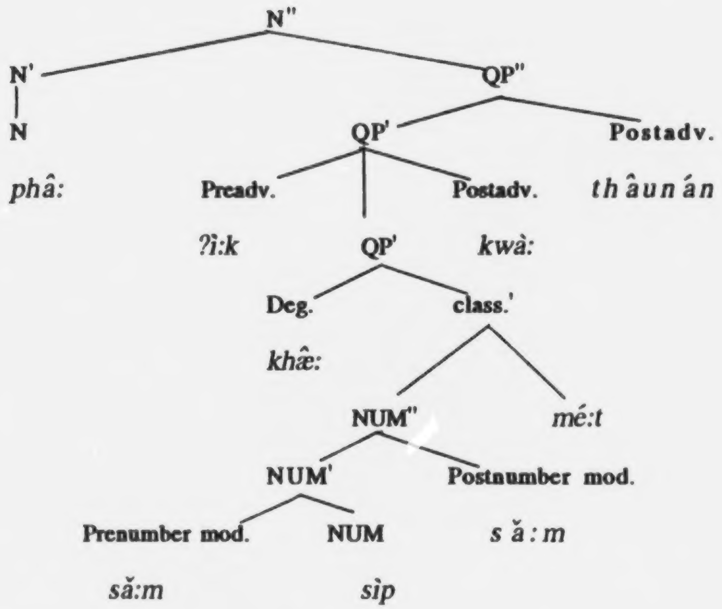
just only thirty three meters of cloth plus more
(a little bit more than thirty three meters of cloth but
not to thirty four meters)

(73) *phâ: ʔì:k khæ̂: sǎ:m sìp kwà: mé:t thâunán*
cloth again just three ten plus class. only

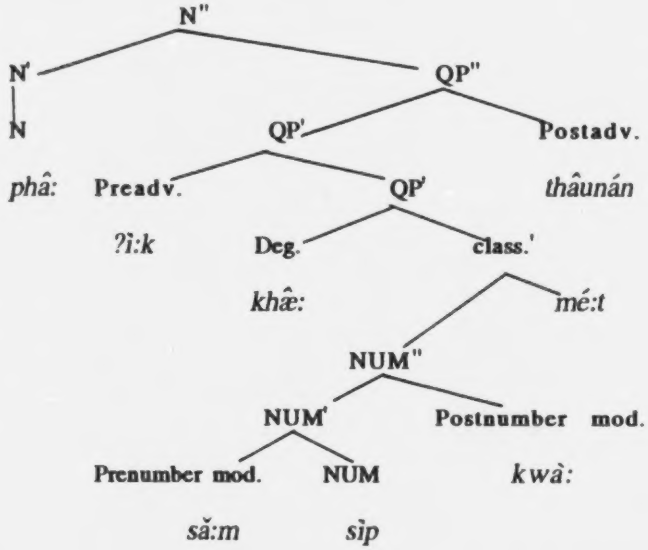
just only thirty meters of cloth plus more
(up to thirty nine but not forty meters of cloth)

(74) and (75) are the associated phrase markers of (72) and (73) respectively.

(74)


N"
N'
QP"
N
QP'
Postadv.
phâ:
Preadv.
Postadv.
thâunán
ʔi:k
QP'
kwà:
Deg.
class.'
khæ̂:
NUM"
mé:t
NUM'
Postnumber mod.
Prenumber mod.
NUM
sǎ:m
sǎ:m
sìp

(75)


N"
N'
QP"
N
QP'
Postadv.
phâ:
Preadv.
QP'
thâunán
ʔi:k
Deg.
class.'
khæ̂:
mé:t
NUM"
NUM'
Postnumber mod.
Prenumber mod.
NUM
kwà:
sǎ:m
sìp

The other two things to observe within the quantifier phrase is how it interacts with demonstrative adjectives and prepositional phrases.

(76) *phâ: să:m mé:t ní: thâunán*
cloth three class. these only

only these three meters of cloth

(77) a. *dæ:ŋ mi: phâ: să:m mé:t ní: thâunán*
Dang have cloth three class. these only

Dang has only these three meter of cloth.

b. *dæ:ŋ mi: phâ: kì: mé:t năi thâunán ná* (echo question)
Dang have cloth how many class. which one only particle

Dang has how many only?

c. *dæ:ŋ mi: să:m mé:t ní:* e
Dang have three class. these

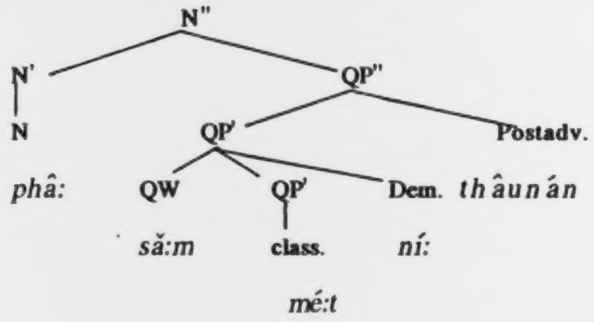
Dang has these three meters...

(77c) is the answer to an echo question in (77b). The deleted element perceived by the native speaker is *thâunán*. This proves that *thâunán* is the external node and there is no quantifier phrase like (78).

(78) **dæ:ŋ mi: phâ: să:m mé:t thâunán ní:*
Dang have cloth three class. only these

The ungrammaticality in (78) proves that demonstrative adjective is attached in the internal structure of QP. (79) is the phrase marker of (76).

(79)



(80) *phâ: sǎ:m mé:t kwà: ní: thâunán*
cloth three class.plus these only

only these three meters of cloth plus

(81) *phâ: sǎ:m mé:t ræ̂:k ní: thâunán*
cloth three class. the first these only

only these first three meters of cloth

(82) **phâ: sǎ:m mé:t nìŋ ní: thâunán*
cloth three class. one this only

only this one meter of cloth

(80), (81), (82) show how *ní:* interacts with the postmodifiers *kwà:* and *ræ̂:k*. These two postmodifiers can occur before demonstrative *ní:* but not the postmodifier *nìŋ* which is not surprising because 'this one' is quite redundant in Thai; even though, there are some languages that permit this structural configuration. *kwà:* and *ræ̂:k* always occur before *ní:* because we cannot have the sentences like (83) and (84).

(83) **phâ: sǎ:m mé:t ní: kwà: thâunán*

(84) **phâ: sǎ:m mé:t ní: ræ̂:k thâunán*

The demonstrative *ní:* gets attached to another level within the QP. The evidence that can support this is from (85).

(85) a. *dæ:ŋ mi: phâ: sǎ:m mé:t kwà: nǎi thâunán ná*
Dang have cloth three class. plus which only particle
one
(echo question)

Which three meters of cloth plus does Dang have?

b. e *ní: nǎi*
this one particle

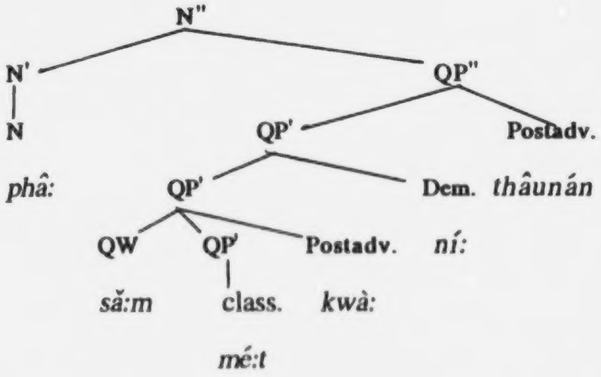
(86) a. *dæ:ŋ mi: phâ: sǎ:m mé:t ræ̂:k nǎi thâunán ná*
Dang have cloth three class. the which only particle
first one

Which first three meters of cloth does Dang have?

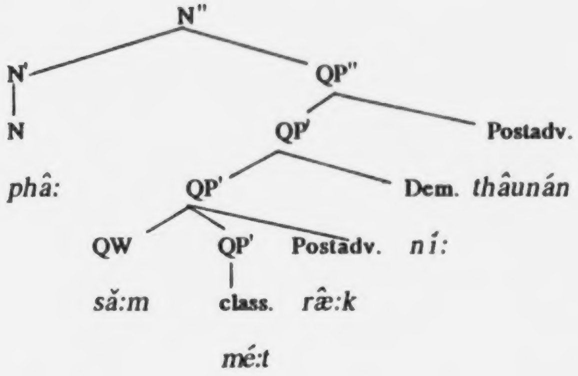
b. e *ní:* *năi*
this one particle

In (85a) and (86a), *ní:* is substituted by the question word *năi.* In (85b) and (86b) which are the answers to (85a) and (86a) respectively, *ní:* can occur alone and the empty elements are perceived as *să:m mé:t kwà:* and *să:m mé:t ræ̂:k* respectively. (87) and (88) represent the phrase markers of (85) and (86) respectively.

(87)


N"
N'
QP"
N
QP'
Postadv.
phâ:
QP'
Dem.
thâunán
QW
QP'
Postadv.
ní:
să:m
class.
kwà:
mé:t

(88)


N"
N'
QP"
N
QP'
Postadv.
phâ:
QP'
Dem.
thâunán
QW
QP'
Postadv.
ní:
să:m
class.
ræ̂:k
mé:t

In (87) and (88), *ní:* comes off at upper level (another QP') from the arguments developed in (85) and (86) aforementioned.

(89) *phâ: să:m mé:t thâunán khɔ̌:ŋ phǐ:n ní:*
cloth three class. only of class. this

only three meters of this cloth

(90) a. *dæ:ŋ mi: phâ: sǎ:m mé:t khɔ̌:ŋ phɨ̆:n ní:*
Dang have cloth three class. of class. this

Dang has only three meters of this cloth.

b. *dæ:ŋ mi: phâ: ___ki: ___ mé:t thâunán ná*
Dang have cloth how many class. only particle

khɔ̌:ŋ phɨ̆:n ní: (echo question)
of class. this

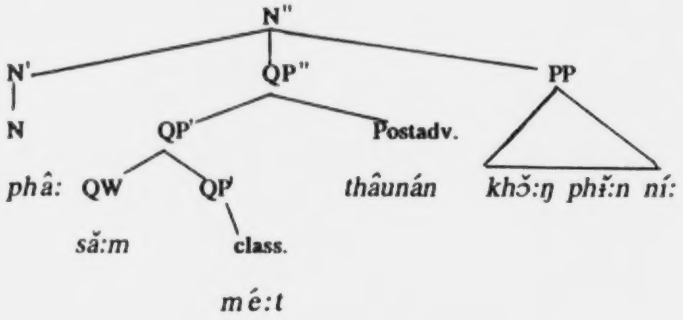
Dang has only how many?

c. *dæ:ŋ mi: sǎ:m mé:t thâunán* e
Dang have three class. only

Dang has only three meters...

(90c) is the answer to the echo question of (90b). The empty element is perceived as the prepositional phrase (PP). This reveals the evidence that PP should be detached from QP and is a different phrase-level category all by itself as displayed in (91).

(91)

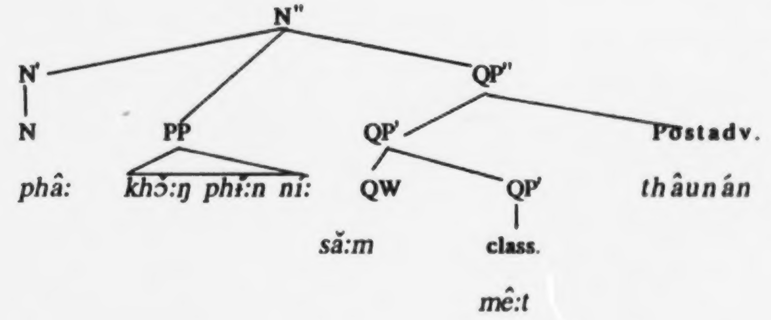


(92) *phâ: khɔ:ŋ phɨ̆:n ní: sǎ:m mé:t thâunán*
cloth of class. this three class. only

only three meters of this cloth

In (92), PP and QP are reversed in order. This shows that the PP and QP have free relative ordering and therefore are attached at the same level of phrase structure. (93) is the diagrammatic representation of (92).

(93)


N"
N'
N
phâ:
PP
khɔ̌:ŋ phɨ̂:n ní:
QP"
QP'
QW
sǎ:m
QP'
class.
mɛ̂:t
Postadv.
thâunán

Last but not least, the postadverb *thâunán* can modify only nouns without the numeral classifier as in (94).

(94)

kæ̂:w	*thâunán*
glass	that many

that many glasses

However, the meaning of *thâunán* is not 'only' anymore. It means 'that much' or 'that many.'

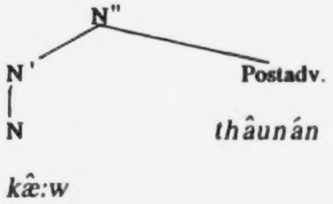
(95)

dæ:ŋ	*mi:*	*kæ̂:w*	*thâunán*	*mâi*	*phɔ:*	*rɔ:k*
Dang	have	glass	that many	not	enough	particle

Dang has not enough glasses.

In this case, *thâunán* does not occur in the QP but it modifies the head noun all by itself and comes off N". (96) is the associated tree diagram of (94).

(96)


N"
N'
N
kæ̂:w
Postadv.
thâunán

From the overall structures of the quantifier phrases and the arguments provided thus far, we have seen how X' Syntax deals with the data in Thai. This model remedies the deficiency of traditional and early transformational grammar as it provides insightful analyses based on distinctions between intermediate level nodes which display internal hierarchical structure as well as a linear structure of the phrase. In addition, this leads to an account of the different meanings of the structure itself.

NOTES

1 a kind of question one utters when a previous sentence one has heard was either somewhat inaudible or unbelievable.

2 or any cardinal numbers except all the digital words: 10, 100, 1,000, 10,000, 100,000, 100,000,000

3 the question word used in an echo question when QP has demonstrative adjective as it member: *kì:* + classifier + *năi* . *năi* means 'which one' which characterize the semantic nature of demonstrativeness.

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NOUNS IN TUTELO

Giulia R. M. Oliverio

Abstract: My purpose in this paper is to sketch the different features of noun grammar in Tutelo, a Siouan language of the East. A description of derivational processes will not be attempted here though as much more study is required before an accurate account can be given.

Tutelo is a Siouan language that used to be spoken in Virginia and the Carolinas, away from the rest of the Siouan stock. Before it died out a few scholars collected data on the language, a limited amount but perhaps sufficient to elicit the main features and characteristics of Tutelo.

This paper is a first systematic study of the noun in Tutelo. It will look into the shape of the root, the marking of gender and number, the expression of possession, the process of making a noun into a verb, and the place of the noun within the sentence.

1. Root

It is not always clear what the actual root of a noun is. Some nouns end with a -CV sequence and some others with a -CVC sequence; and *some* of the former type allow the elision of the final vowel. This usually occurs when the noun is followed by another word, especially one that modifies it, but this phenomenon is not consistent. On the other hand, words that do retain their final vowel do so consistently.

But to this root a suffix *-i* or a suffix *-x* or *-h* is sometimes added. Several sets of nouns show this alternation *-i*/*-x* but the glosses given show no difference in meaning. As no trace of article is found anywhere in the data but all other Siouan languages do have some kind of determiner, it could be inferred that these suffixes are used to denote definiteness and indefiniteness. Mandan displays a similar set of articles, the suffix *-ɛ* being the indefinite article and *-s* the definite, and the Tutelo suffixes may be reflexes of this set. But this is only a hypothesis,

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the more so as the interpretation of these suffixes as articles is challenged by a study of cognate words in other Siouan languages showing that some Tutelo words end with a *k* not found elsewhere and very similar to the usual form of the Siouan article: *ki/kį*. Only further study will shed light on the nature and function of these different suffixes.

2. Gender and Number

Gender There is nothing in the data indicating that a distinction of gender exists, be it between masculine and feminine or animate and inanimate.

In this respect Tutelo seems to differ from most other Siouan languages.

Number There does not seem to be any inflection for number on the noun itself. Other means are necessary to denote plurality versus singularity: the use of numerals, adjective reduplication, or 'verbalization' of the noun (see 4).

Numerals: The numeral follows the noun it modifies. The suffix *-i* previously mentioned then attaches to the numeral -- it attaches to the noun phrase.

(1) mihą nǫsa-i
woman one -suf
'one woman'

(2) mihą nǫpa-i
woman two -suf
'two women'

Reduplication of the Adjective: When used with an adjective, the plural is marked by reduplication of part of the adjective.

(3) a:ti: asą́
house white
'a white house'

a:ti: asąsą́sel
house white-reduplicated
'white houses'

The accented syllable of the adjective is reduplicated and then in the plural form the second of the two similar syllables is accented. A suffix *-sel* (or *-se*) is added to the reduplicated form, a verbal suffix according to Hale (1883) so that it would have become a stative verb; and (3) would actually mean 'they are white houses'.

As said earlier, the noun itself is not inflected for number but in a few plural glosses and some where number was uncertain (either singular or plural) some nouns looked as if they had undergone reduplication themselves.

(4)	ste:k	Hale: 'an island'
	steste:ki	Hale: 'an island' Dorsey: 'probably,islands'
	hasisia:i	'a raspberry, raspberries'
	? čuča:ki	'finger-nails'
	? atkasusai	'toes'

But without more examples, it is difficult to infer anything on this matter from these instances.

3. Possession

There are two types of possession in Tutelo: inalienable possession and alienable possession. The former expresses a stronger link between the possessor and the 'possessed' than the latter.

Inalienable Possession The nouns that are marked as inalienably possessed are nouns referring to kinship terms, body parts, and the words for 'friend' and 'house'.

The verbal patient pronouns given in (5) are used to denote inalienable possession, and they are prefixed (and two are suffixed to mark plural number) to the noun.

(5)	singular	plural	
1st person	wi-	wae-/wai-	
2nd person	yi-/hi-	yi-/hi-	-pui
3rd person	e-/ei-/i-	e-/ei-/i-	(-lei/-hlei)

(6)	sųtka	'younger brother'
	wi-sųtk	'my younger brother'
	yi-sųtk	'your (sg) younger brother'
	e-sųtka	'his/her younger brother'
	wai-sųtka	'our younger brother'
	yi-sųtka-pu:i	'your (pl) younger brother'
	ei-sųtka	'their younger brother'

But for body part terms the prefixes are different from the set given above, although related. In the data are five instances of body part nouns used with possessive prefixes and four of them have the following set of prefixes:

(7)	wįta-		'my'
	yįta-		'your (sg)'
	eta-		'his/her'
	yįta-	-pu:i	'your (pl)'

(8)	su:	'eyes'
	wįta-su:	'my eyes'
	yįta-su:	'your (sg) eyes'
	eta-su:	'his/her eyes'

The fifth instance, the word for 'leg', does not follow that pattern though:

(9)	ni:	'leg'
	wi-ni:	'my leg'
	yi-ni:	'your (sg) leg'
	e-ni:	'his/her leg'

But all the above set was derived by Hale and Dorsey from only one attested form: *wini:* 'my leg'. And there is another attested form for 'leg': *ieksa:* or *yeksa:*, which is totally different. This last example should then be used with caution.

On the other hand though some body part terms might take different possessive prefixes than others as is the case in other Siouan languages. But with only five instances in the known Tutelo data this issue cannot be settled.

The words for 'father' and 'house' show irregularities when possession is expressed:

(10)	a:ti:	'house'
	ewa:ti:	'my house'
	eya:ti:	'your (sg) house'
	ea:ti:	'his/her house'
	ewa:nti:/ewą:ti:	'our house'
	eya:ti:pu:i	'your (pl) house'
	ea:ti:lei	'their house'

(11)	? a:t	'father'
	ta:t	'my father'
	ya:t/ita:ti	'your (sg) father'
	ea:t	'his/her father'
	ewaa:t	'our father'
	eya:tpu:i	'your (pl) father'
	?	'their father'

Because these two words begin with a vowel the vowel of the possessive prefix is elided. But the different forms of 'house' show another irregularity, as do some forms of 'father'. A supplementary prefix e- is found throughout the set for 'house' and in a few instances for 'father', and a few other words display this prefix in parts of their possessive paradigms. But nothing in the glosses suggests its function. Rankin (personal communication) suggests that this prefix might be a reflex of Proto-Siouan **?e:*, deictic 'this', as the informant(s) might have answered a question with 'This is my house'. For the second person singular of the word 'father', two forms are given. The first one is the one that fits the rest of the paradigm and it refers to one's own father. The second form refers to someone else's father and it is the only attested form for this term.

Alienable Possession Alienable possession is used with all other nouns, although the limited data might conceal some irregularities such as the use of this type of possession with a few body part terms as is found in other Siouan languages.

To express alienable possession, a possessive adjective follows the noun it modifies. It seems to be a lengthened form of the verbal patient pronouns used for inalienable possession but the rest of the adjective has so far defied analysis.

(12)	wįki:towi / wįki:towe	'my'
	yįki:towi / yįki:towe	'your (sg)'
	ki:towi / ki:towe	'his/her'
	mahki:towi / mahki:towe	'our'
	yįki:tǫpu:i	'your (pl)'
	ki:tohlei	'their'

(13)	hise:p	'axe'
	hise:p wįki:towi	'my axe'
	hise:p yįki:yowi	'your (sg) axe'
	hise:p ki:towi	'his/her axe'
	hise:p mahki:towi	'our axe'
	hise:p yįki:tǫpu:i	'your (pl) axe'
	hise:p ki:tohlei	'their axe'

But a totally different set of adjectives is used with the word for 'dog':

(14)	čhųk	'dog'
	čhųk wahkįpi	'my dog'
	čhųk yahkįpi	'your (sg) dog'
	čhųk eohkįpi	'his/her dog'
	čhųk mahkįpi	'our dog'
	čhųk yahkįpu:i	'your(pl) dog'
	čhųk kįpena	'their dog'

These possessive adjectives seem to be derived from the verbal actor pronouns which are as follows:

(15)	wa	'I'
	ya	'you'
	wae/wai/mą/mąk	'we'

It is difficult to conclude anything from this exception affecting a single noun in the whole data. But the fact that verbal actor pronouns seem to function as possessive adjectives might suggest that they are actually verbs, although the glosses do not give any evidence for this.

Another irregularity in the denotation of alienable possession is found with the words for 'pocket handkerchief' and 'stick'. The first person singular possessive adjective (the only one recorded) is different from the regular form given in (12):

(16)	mihąsa	'pocket handkerchief'
	mihąsa wikitą	'my pocket handkerchief'

(17)	hąksik	'stick'
	hąksik wikitą	'my stick'

The change is only in the last syllable of the adjective, which is still very similar to its regular counterpart (cf. the regular second person plural adjective in (12)). The difference in meaning between the two, if there is any, might be very slight. But it is not possible to infer it from the data.

4. Verbalization of the Noun

A noun can be made into a stative verb by affixing the verbal patient pronouns to it (see (5)).

(18) wahta:ka -i
man, Indian -suf
'a man, an Indian'

wa -yi- hta:ka-i
-you(sg)-
'you are an Indian'

Person and number then are marked as they would be on a verb.

But if there is an adjective modifying the noun, the adjective and not the noun will be made into a stative verb, thanks to the same set of pronouns.

5. Nouns and Word Order

As mentioned before, an adjective or a numeral follows the noun it modifies. With verbs though, the position of the noun does not seem to be of importance: whether subject or object, it can be placed before or after the verb.

(19) ku- wi- ne -na , mi Jan
neg- 1st Pat- see -neg , but John
'I did not see him, but John saw him'

hi- ne -ka
?- see -past

(20) uklese wita:
float deer
'A deer floats'

(21) istik ya i- wa- ǫða wi- latkusi
stone ? instr-1stAct-use 1stPat-break
'I will break the stick by using a stone'

ta hąksik
fut stick

(22) hinosik-ya i- wa- ǫða wa- kte
bow -? instr-1stAct-use 1stAct-shoot
'I will break a stick by shooting at it

ta hąksik wi- latkusi ta
fut stick 1stPat-break fut
using a bow'

There is no basic word order, the placement of the subject or object noun before or after the verb does not change the meaning of the sentence. But Hale (1883) mentions that if the speaker wants to emphasize something in a sentence he will place it at the beginning.

This free word order is not found in other Siouan languages which are mostly SOV languages. This is an innovation in Tutelo as it was isolated from the rest of the Siouan stock and was influenced by Tuscarora, a neighboring Iroquoian language. Indeed the Tutelo and Tuscarora tribes had friendly relations with one another, relations that went as far as the adoption of the Tutelos within the Tuscarora tribe. And Tuscarora is a language with no set basic word order (Williams, 1976) as the rich pronominal inflection on the verb is sufficient to avoid ambiguities. Tutelo verbal inflection being similar, although not as rich as in Tuscarora, the evolution from SOV --which Tutelo must have been at one time -- to free word order was possible.

Conclusion

This paper has dealt with all the aspects relevant to the noun in Tutelo: the root, the article, number marking, inalienable and alienable possession, and word order. In each of these areas problems have been uncovered, the main one being the existence and form of an article. The next steps in the understanding of Tutelo noun morphology are the study of the rest of Tutelo grammar and the search for cognates in other Siouan languages so that the problems raised in this paper may be solved.

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PROTO-ALGIC IV: Nouns

Paul Proulx

Abstract: In Proto-Algic, a primary noun stem often ends in a derivational final, a secondary one in a nominalizer. Both usually resemble demonstrative pronouns in shape. A dependent noun stem lacks a root, and generally begins in **i:, **o:, or in a consonant other than **p or **k(w). In those cases where it is paired with a medial beginning in **p or **k(w), a prefix receptor (**-c, **-ł, **-s, **-S, or **-t) is prefixed. Inflection for allocation differs for kin, human body parts, parts of nonhumans, and general nouns.

0. Introduction

This paper completes a sketch of Proto-Algic morphology which I began with a description of the verb (Proulx 1985a, reconstructions 139-238) and of pronouns (Proulx 1991, reconstructions 239-271).[1] It's for the most part a straightforward description of Proto-Algic noun structure and inflection. In addition, however, it includes a more detailed reconstruction of the endings of third-person singular verbs - which show a striking resemblance to those of some classes of nouns (a similarity of the sort already well-known in Algonquian). The possible glottogonic origins of these endings is then discussed. First, however, we need to update the phonology of the protolanguage.

1. Phonological Notes

The main correspondences in this paper have been described in my sketch of Proto-Algic phonology (Proulx 1984). In addition, I have shown (Proulx 1985a:sec.12) that **my gives Y y, that PA ŝ from **r and **ĉh (as well as from **ŝ) alternates to PA *ł before a morpheme boundary (except before PA *y and **i[:]), that **? remains as glottal catch before a vowel in Wiyot and PA. I have also adjusted the reflexes of vowels in monosyllables, and of prevocalic **l and **r (Proulx 1991:sec.1.1, 3.1). To summarize briefly the updates to the original sketch:

The length of final vowels in syntactically independent monosyllabic Proto-Algic words is noncontrastive: the phonetic length of such vowels is determined chiefly by the presence or absence of stress. Generally, their reflexes coincide with those

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of short vowels in Algonquian, and with those of long vowels in Wiyot and Yurok. The reflexes of **l and **r are:

PAc	PA	W	Y
*l	*l	l(r)	r(l)
*r	*ŝ(ł-)	ŝ(s)	s

By this account, Proto-Algic *r continues to give Pre-PA *ŝ (with a regular secondary alternation of Pre-PA *ŝ to *ł before morpheme boundaries), but before vowels it also gives Wiyot ŝ (or s - the two alternate synchronically), and Y s - reflexes already identified in consonant clusters (see Proulx 1984:195). Before vowels, Proto-Algic *l continues to give PA *l and W l, but it gives Y r rather than l (see Proulx 1984:195 for its reflexes in consonant clusters). The l/r alternations in the Ritwan Sprachbund are now seen to be secondary from *l alone.

Besides these already-established correspondences, a number of the reconstructions in this paper involve new ones which fall in two groups: (1) **S plus apical clusters, and (2) a new phoneme **gw.

1.1. New Clusters. One of the main gaps in the sketch is the series of consonant clusters (other than **tl) consisting of two apicals. The first member of these clusters is always **r or **S (where **S = s or r):

PAc	PA	W	Y	Examples.
**St	*?t	t	st	BIG, EXHAUST
**Sc	*?s		sc	EXHAUST
**Sĉ	*?ŝ	c	sc	BIG, DARK
**Sl	*?l		ɬ	DIVIDE, SKIN, FAR
	#*ɬ	#ɬ	#sr	DIVIDE, SKIN, SINGE (# = initial position)
**Sr	*?ŝ		s	SKIN, SINGE
	#ŝ			DIVIDE, alternations (# = initial position)
**Stl	*?t		ɬ	BARE
**Scr	*?s			BARE, alternations
**rt	*?t		st	1-DIMENSIONAL
**lt	*ht	t	t	1-DIMENSIONAL, BOW

Examples of S-clusters:

(272) **keSt-, **keSĉ- 'big, much': PA *ke?t- 'big' A769 (and 'old', as in *ke?tesiwa 'old person' A769), PA *ke?ĉi- 'much, greatly' A760; W kɨc- 'a lot', as in ta-kɨcɨ?wɨd 'one gets a lot' (transcribed with aspirated ch) with deverbal medial **-e?w 'catch, kill' (see **re?w- #345). More common is W kɨcw-, with **-Vw 'postradical extension': kitka kɨ́cwatbiɬ 'she's going to build a big fire' (with **-Vt 'heat' #185), kɨ́cwatɨb 'I cook it too much', kɨcwa?yulɨwīɬ 'she's packing a big load'.

With intensive change, this stem generally means 'old': PA *ke:?te:- (with link **e: incorporated in the stem) 'old' A659 (reconstructed with *ht, but compare M k∊:?c- 'big, old'); W kíta?w 'it got old' (with **-Vw 'be'). Note that even in this archaic use of intensive change, Algonquian has its productive ablaut of *e to *e: rather than the usual infixing characteristic of Proto-Algic and seen in the Wiyot stem (with contraction of **ege to W i). Compare also C kistiyiniw and ke:hte:yiniw 'old man', M k∊?c- and k∊:?c- 'big, old', and perhaps F kehta 'formerly' and K keehta 'previously'. It has always seemed odd synchronically that W kɨc- 'a lot' should have c rather than grade-3 ĉ as the meaning would suggest. However, grade 3 **Sĉ DOES make sense, and the very commonness of the root would have made leveling out of regular sound change unlikely. Evidently then, **Sĉ simply gave W c.

(273) **megwi:Stl-, **megwi:Scr- 'bare, without anything': PA *mwe?t- 'bare, without anything', Y megił 'without anything'; PA *mwe?s- 'bare, without anything' (C mose:tiye:hkwa:miw 'she sleeps with bare buttocks'). The Yurok word is a free adverbial, the Algonquian one a preverb and adverbial root.

PA *mwe?t- 'bare, without anything': C mosta:pe:kase:w 'she goes naked', mostihkwa:miw 'she sleeps alone on the bare ground', mosta:htaka:w 'bare ground', mosta:twe:witam 'she speaks without effect', M mo?tahakɛw 'she's bare-skinned, naked', mo?tawekanɛ:hsen 'she lies with her back exposed', mo?ceh 'having nothing, empty handed'. PA *mwe?tohłe:wa 'she walks (having no mount or vehicle)': C mostohte:w 'she merely walks', M mo?to:hnɛw. The Lake languages have dissimilation of labials in this item, for Ps-PA *me?t- (cf. O ma:nk, Mi ma:nkwa 'loon' from PA * mwa:kwa A1338).

(274) **ne:St- 'exhausted, to exhaustion', **ne:Sc- 'weak, inadequate': PA *ne:?tw- 'exhausted', Y nest- 'pushing one's body to its limits'; PA *ne:?sw- 'weak, weary', Y nesc- (and na:sc-) 'inadequate'. PA incorporates postmedial **-Vw, and the last Yurok by-form has ablaut. Examples: C ne:stosin 'she lies tired', ne:stohkwe:kawiw 'she bleeds to exhaustion or death', ne:stwa:kona:mo:w 'she's tired from running in snow', Y nesto?rep? 'she runs fast', nestetoyek? 'I've been badly hurt in my flesh', nesturek? 'I reach the other shore'; C ne:so:wan 'it's weak', ne:so:wisiw 'she's weary', Y nescinepek? 'I don't think I can do it' (na:scinepek? 'I feel inadequate to a task').

(275) **neSĉV 'last night': W dɨcɨwɨ̀ 'last night', Y nahscuh 'last night'.

(276) **neSĉ-, **neSt- 'night; dark, lonely, awful': PA *ne?ŝ- 'dark, alone, awful', changed, infixed, and reduplicated *nanye:?t- 'lonely, night', Y nahsc- (in nahscewen 'night', and nahscuh 'last night'), W dɨcɨw- 'night' incorporates postmedial **-Vw (in dɨcɨwɨ́?l 'nighttime', dɨcɨwɨ̀ 'last night', and dɨcɨwɨ́tal 'I'm going out at night', with -Vtal 'go').

This item shows PA *e = W ɨ = Y ah in a first syllable. Y ah and e sometimes are in free or conditioned variation in this environment (Y srahkwoh 'loincloth' and slekwoh 'shirt', and compare Y -ahtew 'hand' beside more common -etew). This correspondence contrasts with PA *e = W i = Y ah in a first syllable (see #32, 46, 47, 111), for which **i is reconstructed.

I reconstruct **e for it, allowing that it split into Y e (generally) and a plus automatic h where needed in rarer and as yet undetermined environments. Possibly, an adjacent **S and/or Yurok s or Pre-Yurok *s was one such environment.

PA *ne?ŝ- 'dark, alone, awful': M n<?sek- 'dark' (in n<?sekapew 'she sits in the dark'), K nesi- (in nesikee- 'live alone', K nesíahki- 'be awful ground'). PA *nanye:?t- 'lonely, night': M nani:?tak- (in nani:?tak<sew 'she's lonely', nani:?takena:kwat 'night is falling'). The two Menominee stems incorporate postmedial *-ek.

The pattern of reduplication in this and in a few other Algonquian nouns is complex, involving ablaut (archaic or not), sometimes infixing (as in DARK and CLOSED), as well as the prefixed syllable itself. For example: PA *kakye:p- 'closed (of senses)' A576, beside *kep- 'cover, close, block' A728-757.

(277) **SleSl-, **SlaSl-, **SleSr-, **SraSl-, **SlegeSl- 'divide': (a) PA *łe?law- 'fork', Y slahł- 'separate, apart', (b) PA *ła?law- 'fork', (c) Y slahsicok? 'I parted from them' (-Vc 'go'), (d) PA *ŝa?law- 'fork' (M sa?naw- 'fork'). This stem shows that **Sl gives PA ł in word-initial position (beside *?ł medially), and Y ł after h, while **Sr gives PA *ŝ (or *s) in this position. See #276 above on the alternation of Y ah and e.

PA *łe?law-, *ła?law- 'fork': K nezaaahi 'forked pole', Sh l(e)?θaw- 'forked' (le?θawa:lanye?θi 'fish-hawk = forked tail feathers', lθawa?katwi 'it's forked'), Mi neswehikwani 'I divide it' p.381; F nasawa:nakesiwa 'she forks at the opening', changed ne:sawa:hi 'the forked support of the booth', bO nassawabideigan 'fork'. Menominee examples (reflecting PA *ŝa?law-): sa?nawa:hkwat 'it forks as wood, solid', sa?nawepaniw 'the road forks', sa?nawanani:w 'split-tailed eagle', sa?nawehn<n 'it (esp. stream) lies forking'. Yurok examples: syahłecok? 'I separate from someone, as at the fork in a trail', syahłecewek? 'I left the group', syahło?opek? 'I build my own fire apart', syahłinemek? 'I separate things'.

(278) **Sleyep?et-, **Sleyep?at-, **Sreyep?ec- 'singe': (a) W łɨptat 'singe (duck)' (with -at 'cook, fire', as in kɨ́cwatɨb 'I cook it too much'), (b) PA *łi:pat- (C ci:pataham 'she puts it on a spit'), (c) Y seyep?c?- 'singe'. Generally PA *ł alternates to *ŝ before *i: - but evidently the development of initial **Sl into PA *ł postdates this rule and is exempted from it. Instead, **Sl gives *ł, which in turn gives C t and secondarily C c. After the loss of the **e separating them, a simple affricate is glottalized after a glottalized stop in Yurok (p?c ---> p?c?). In Wiyot, 'aspirated stops... do not participate in clusters' (Teeter 1964:16), so presumably Pre-Wiyot *ph from **p? was simplified in

that environment (pht ---> pt).

(279) **weSlaw-, **wa:Slaw- 'far away': W łáwik 'it's far away' (with -ik as in kłɨtik '[it's] hot' from **kełeyet- 'hot' #93), PA *wa:?law- 'distant' (C wahyaw 'far', M wa:?naw 'distant, long time', O wa:ssa 'far'). This stem evidently contains the postradical extension **-Vw added to a root **weSl- or, with archaic ablaut, **wa:Sl-. Thus, compare F wa:sahkamiko:ha 'person of a distant land' (with medial PA *-ahkamik 'space' A81). The loss of initial **we is regular in Wiyot.

(280) **waSlak-, **waSlek-, **waSrak-, medial **-erek- and **-arek- 'skin' (mostly reinforced with the final **-ay 'skin' no.53): (a) PA *wa?lakaya 'skin, scale' (C wahyakay 'scale', Mc wa:xi 'skin'), (b) Y srahkwoh 'loincloth', slekwoh 'shirt' and slekwslekw 'clothes', (c) PA *wa?ŝakaya (C wasakay, r10 waŝakay); (d) PA *-eŝkaya (in *-łameŝkaya 'inner skin, membrane' S176), W wɨ́tkay 'skin' (incorporation the third-person prefix), Y skoy 'strip of buckskin'.

(281) **-Vlt, **-Vrt '1-dimensional' (and usually some final): (a) PA *-a:htekw 'tree, stick, wood' A13, W -áti? 'tree, wood' (máti? 'wood', wikwáti? 'pine or fir trees'); (b) PA *-e?tekw in *me?tekw- 'tree, wood, stick' A1229-1235, Y -ostek? in stostek? 'small fir tree'. See Bloomfield (ML:262) for the PA noun final *-ekw. This abstract final is in turn composed of noun-final *-w (Bloomfield 1946:sec.60) and a residue *-ek perhaps cognate to Y ek? 'long and pliable' (Robins 1958:88). Wiyot -i? is cognate to Y -o? 'tree' (reflecting **-V? 'tree'). See Denny (1986:149) on the classifiers of manipulable objects in Ojibwa, notably O -aatig '1D-rigid'.

Examples: M ena:htek 'that kind of tree, stick', O po:ta:kɨna:ttik 'pestle stick', O ɨnina:ttik 'hard maple', W wɨtkɨdát 'bones' from **w?ełkani #26, W -ɨłwat 'plant' from **-ałw, **sema:lt- 'bow' (#282 below) beside **ŝema:y- 'shoot' (with postradical **-Vy), and perhaps W wɨtbɨ́t 'head' from **wetempi #90.

(282) **sema:lt-, **ŝema:lt- 'bow': W ŝbát-, Y smohta?r (with -a?r 'stick'), ?nesomet 'my bow' (with metathesis of the last two vowels) Nb.1:2. Includes the medial **-Vlt '1-D' #281. Cf. Proto-Pomo *xihmúy or *xi(?)mi 'bow', where *x ---> ŝ in some languages. The Proto-Algics didn't have bows, so perhaps the term was transferred from dart-thrower.

1.2. A New Phoneme. Another set of correspondences leads me to posit an additional phoneme, **gw (which fits nicely into the phonemic system postulated earlier, Proulx 1984:202). This phoneme is hard to recognize, as its reflexes drop in some phonological environments. Correspondences are:

	PAc	PA	W	Y	Examples.
(A)	**gw	*w	g	g	unconditioned
(B)	**egw	*w		eg	TIRED OF, BARE
(C)	**e:gw	*e:w		eg	BIG BIRD, MALE
(D)	**Vgw	*Vw	Vg	Vg	OUT, BELLY
(E)	**?e:gw		ág	?e?g	MADRONE
(F)	**i?a:gw	*ye:w	àg	o?og	COALS

Recall that (as in A, B) **e drops between a consonant and *w in PA, that (as in B, C) **eg drops in Wiyot except in a first syllable (Proulx 1984:192) and (as in E) **e: gives W a before **?w #50-51 (hence likely before **gw), and that **g is glottalized when the next preceding consonant is an initial glottalized one in Yurok. Examples are:

**megwi:Stl-, **megwi:Scr- 'bare, without anything' #273: PA *mwe?t- 'bare, without anything', Y megiɬ 'without anything'; PA *mwe?s- 'bare, without anything'.

(283) **ata:gw, **eta:gw 'belly': deverbal PA *-ata:w 'stomach' (in Sh hope?kwata:wiloke 'she has a stomach ache', with PA *petkw- 'lump, sphere' [see **aphetk- #346]), W tágɨdɨ?l 'her belly' (with incorporation of the abstract verbal final **-Vn #177).

(284) **nepe:gw- 'be male', **na:pe:gwa 'male': Y pegiɬ 'male animal', pegɨk 'man' (with the regular loss of initial **ne- before single obstruent [Proulx 1984:197], and added nominalizers), PA *na:pe:wa 'male, man' A1352 (with archaic ablaut), cf. *aya:pe:wa 'buck' A233.

(285) **pele:gwa 'large bird': PA *pele:wa 'turkey' A1814, 'large fowl, edible game bird' (Siebert 1967:18), PA *pele:hsyiwa 'big bird', Y pregoniŝ 'condor', plege?l 'type of owl' (cf. plegok 'headband of woodpecker scalps'). There are two sources of Y o, **a: and **o (Proulx 1984:181). Since **g gives Pre-Y *w in rounding environments (Proulx 1984:170, n.3), the Y o following these stems must be from **a:. In contrast, in Y preworiɬ 'screech owl' it must be from **o.

This item begins in a root **pel-. Compare PA *pele:hsyiwa 'big bird' (C piye:siw 'Thunderbird', M pen<:hsiw 'eagle', O pɨne:ssi 'big bird') and *si:pe:hsyiwa 'bird' (Ab síbes, A nii?éhii). For another example of the ending, compare PA *ŝa:nkwe:hsyiwa 'mink' A1968 (with archaic ablaut, reconstructed without the *y) with *ŝenkwehsa 'weasel' A1985 (with diminutive *-ehs).

(286) **s?e:gw... 'madrone': W ŝáġiŝɨ?n, Y s?e?goh 'madrone tree'.[2]

(287) **ŝegw-, **ŝagw-, **segegw- 'be tired of': (a) Y ceg- (in cegeyonepek? 'I'm annoyed' NB.1:61), cega?roy- 'hear with distaste' and cegeyolok? 'I'm tired of hearing it'), (b) PA *ŝaw- 'be tired' (Pe sawahto- [Voorhis 1979:65], Ms sauunum 'she is tired, weary, faint', Nr nissówanis 'I'm weary', cf. Mc sewik'na:t 'she's ill, listless'), (c) PA *ŝi:w- (Mc siwiyet 'she's frustrated, bored', Mc siwsɨtax 'I'm tired of hearing her', Ps siw-, Pe nsíwelɨtam 'I'm weary of mind' [Seeber 1983:301], Mah nia n'schewochsannè 'I'm tired'), Y sweget- 'be tired of' (with the transitive unipersonal final -Vt, see #178).

As two of the examples show, Y ceg- generally has the postradical extension **-Vy. The Y w from **g in Y sweg- is not unexpected: underlying Y ege dissimilates to Pre-Y *ewe (and thence contracts to Y u:) before a labiovelar (see Proulx 1984:170, fn.3). Here contraction is not possible because of early loss of the initial weak **e, regular in a first syllable between an obstruent and a consonant other than g (see Proulx 1984:186).

Y sweg- is always replaced by swey- in my fieldnotes before an element beginning in Y o, typically the postradical extension Y -on. Since the Yurok sequences eg-o and ey-o both contract to o:, and there are many analogical restorations of the underlying sequences (Proulx 1985b:137), the sequence eyo here is probably just an unetymological restoration from o:. Alternatively, we may suspect a dissimilation of the feature [+back] such as seen in Algonquian yo: from underlying wo: (compare K ayo:- 'use it' and aw- 'use her'). Also, O e:w-o gives e:yo (Bloomfield 1957:21). The stem Robins cites as sweget- above appears as swewet- in my fieldnotes (Nb. 4:47) - suggesting assimilation of g to w for some speakers.

(288) **thegw-, **thagw-, **thegegw- 'through an opening, passage, space, or door; out': (a) Y tewoye?ewey- 'stick out'; (b) PA *taw-; (c) W thig- 'out' (e.g., thigɨtal- 'go out'). Y tewoye?ewey- 'stick out' consists of -e?wey 'face' and postradical -Vy as in ce?l(oy)- 'dry', nekom(uy)- 'well', neskw(ey)- 'annoying', nohp(uy)- 'into', sek(oy)- 'fast', and wohp(ey)- 'across'. Evidently, the **gw gives Y w under influence of the following o (from **o ?) and/or the ?w in the next element.

PA *taw- 'through an opening, passage, space, or door; out': C tawapiwak 'they sit leaving a passage between', tawi:stawe:w 'she makes room for her, open the tent for her', RhO dwaashing 'she falls through the ice' and dwaahbaan 'a water hole in the ice', Mc tewoxpit 'she sticks out', tewĉe:k 'she or it has a hole'; Mc tewiyet 'she goes out' (with initial change and the final -iye 'motion'), wet-tu:yet 'she comes out of there'. Also PA *tawayewi 'there's an opening, it's an opening': F tawa:wi 'it's an opening', C tawa:w 'it's an opening, there's room, come in', NiO dawaa 'there's room'.

(289) **wanri?a:gwi, **wenli?a:gwi 'coals, charcoal': (a) deverbal PA *-anŝye:wi (in *matkanŝye:wi 'charcoal' S52 beside *matkate:w- 'black', and in PA *katkanŝye:wi 'charcoal' S52 beside C kaskite:wa:w 'it's black'); (b) W wɨràg 'coals' (grade 2-3), Y lo?og, cf. mecewolo? 'live embers, coals'. PA *e: rather than expected *a: in this word is probably analogical reshaping modeled on the many verb endings where apparently *a: alternates to *e: before *w (*nenepa: 'I sleep' A1444 [reconstructed with short *a] beside *nepe:wa 'she sleeps' A1462).

2. Types of Stems

Algic languages have two types of stems, independent and dependent. Dependent noun stems begin in **i:, **o:, in a consonant other than **p or **k(w), or, in one isolated Algonquian case, in **e:. Independent nouns have no special phonological characteristics.

In those cases where a dependent noun stem is paired with a medial beginning in **p or **k(w), a prefix receptor (**-c, **-s and **-S, **-ł, or **-t) is added between them. (This pattern is partly obscured by the tendency to analogically add the prefix receptor to the medial as well in some cases.) In the following examples, parentheses enclose optional analogical consonants attested by some languages:

**-ckitwen-, **-ĉkitwen- 'throat' #152, medial **-V(c)kit, **-V(ĉ)kit #152.

**-skwVtkan 'neck' #267, medial **-V(s)kw #165.

**-tka:t, **-ĉka:ĉ 'leg' #10, medial **-eka:t 'leg' #143, **-Vt 'foot' #167, **-Vtk and **-Vĉk 'body, leg, foot' #168.

**-tkanĉeg, **-ĉkanĉeg 'fingernail' #134, medial **-ekanĉeg #141. Compare **w?etkanĉege, **w?eĉkenĉege 'hoof, claw' #39.

**w?ełkan 'bone' #26, medial *-kan (PA *-kan).

Although synchronic evidence is ambiguous, 'chest (body part)' #343 probably also follows the same pattern. For an example with **-S, see 'skin' (sec.4.4 #280). If the final Y -eł in Y -erpeł 'tooth' is a nominalizer (see sec.3.2 below), then medial **-V?p 'by tooth, bite, eat' #158 is related, showing that **-l is also a prefix receptor.

3. Secondary Noun Stems

Secondary noun stems consist of (A) a primary stem plus diminutive(-meliorative) suffix, or (B) a verb stem plus a nominalizing suffix. There is an augmentative(-pejorative) suffix as well as a diminutive one, but it requires a following nominalizing suffix when used in nouns. See Proulx (1984:sec.2) for matching (diminutive and augmentative) sound symbolism.

3.1. Diminutive and Augmentative Suffixes. They are:

(290) **-V́nc secondary final 'diminutive' #137, 189: PA *-éns, W -ác and -íc. Examples in nouns: PA *a?lapa:pyénsa 'little cord' beside PA *a?lapa:pya 'cord' and *ałemwénsa 'little dog' beside *ałemwa 'dog', W cakíc 'young spruce' (tak- 'spruce'). Examples in verbs: Mc kesinukwa:ĉi:ĉit 'she's a little bit sick' beside kesinukwa:t 'she's sick', M tahki:hsewew 'it's a bit cold' beside tahkiw 'it's cold', and W rariŝwác- 'hum' beside lalisw- 'sing'.

Diminutives are also used with the specialized meaning 'person': PA *-éns (Sh -eLθa in mtekwa:piti:θa 'bowstring person' p.356, wi:pe:mine:θa 'corn-chops person' p.413, nepi:θa 'water person' [cf. M nepi:s 'dwelling in water'], Sh ŝkote:θa 'fire person', ka?ŝile:θa 'rough person', and kiŝpoko:θa 'person of the kiŝpoko division'; cf. Mc wa:we:ĉ 'eggman', na:newa:ĉ 'fifth person' - with diminutive shift of s to ĉ); PA *-énh in F wa:sahkamiko:ha 'person of a distant land'. W kɨbúcɨkwił 'female human' beside kɨbúĉɨkɨ?w 'doe' shows diminutive versus augmentative consonant symbolism associated with the notion of 'human being'. Berman (1986:419) suggests that Y -Vs is a diminutive suffix, so compare also Y punomeyos 'person groaning in sleep', ka:mes 'mythical water monster', cf. productive Y -iŝon 'person' (with accretion on and automatic shift of s to ŝ after i).

(291) **-Vĉk, **-tk 'augmentative- pejorative': PA *-ŝk 'pejorative; habitual action' (O -ŝk), W -ɨĉk 'augmentative-pejorative' T68, 30; PA *-tk 'pejorative; habitual action' (M -hk). Menominee also has -ck, a showing secondary

consonant-grade alternation from Pre-Menominee *-*tk* (Pentland 1983:389). This element is chiefly found in verbs in Algonquian, but also in verbal nouns (e.g., M *keno:hken* 'a lie') - where it is followed by a nominalizing suffix such as **-*Vn*. The link vowel between the two elements is not always as in M *keno:hken*. Compare, e.g., PA **apitkan* 'pack strap (lit. 'what one habitually uses for tying)': M *ape:hkan*, RhO *bikan* (with root ***aph*- 'tie, cord' #347). See sec.4.1 for the evolution of this sequence.

Examples: O *kɨttimɨŝki* 'she's lazy', *ki:nuwiŝki* 'she tells a lie', *kɨŝa:we:ncɨke:ŝki* 'she's envious of disposition' eO:72; M *ta:?takacehkiw* 'she's lazy' beside *ta:?takacew* 'she's unwilling', *sɛ:kesi:hkiw* 'she's easily frightened' beside *sɛ:kesew* 'she's frightened', *kemo:tɛhkow* 'she's a thief' beside *kemo:tɛw* 'she steals it' ML:277-8; W *lɨpĉá?yɨwɨĉk* 'storm cloud, large cloud' (stem *lɨpta?w*- 'cloud' T68), *hinàd piĉuĉkɨdik* 'our grandfather' (cf. W *piĉúk* 'my great-grandfather', with a different suffix). My Wiyot examples all involve nouns, but the W -*ɨd* in the last suggests that it too may be followed by **-*Vn* (which drops in wordfinal position).

3.2. Nominalizers. It is well known that in Proto-Algonquian the 2 main suffixes for marking the third-person in verbs are homophonous with nominalizing ones. Thus, PA independent *-*w* 'definite third-person subject' (Bloomfield 1946:sec.34) beside PA *-*w* 'agent noun' A2074 give the likes of M *anohki:w* 'she works; worker' and M *na:na:w* 'she is invited, someone invites her; invited guest'. Less significantly, since all conjunct verbs produce participles, PA conjunct *-*t* 'definite third-person subject' A2000 forms third-person participles (e.g., F *e:ŝihto:ta* 'she who built them', Bloomfield 1927:213) as well as subordinate verbs (e.g., F *pi:tike:ĉi* 'when she had entered' Bloomfield 1927:204 [with mutation of *-*t* to -*ĉ*]). See also **-*Vn* below for indefinite-subject *-*na* beside verbal abstract *-*n*.

In Wiyot, an example of the same pattern is -*ìɨ* 'agent; third-person subject': *kakwìɨ* 'old man, he is old'.

There are traces of a similar pattern in Yurok. Thus, beside Y -*Vr* 'nominalizer' there is also the third-person ending Y -*ol*, a free variant of Y -*okw* in some verbs: *hego?l* = *hegok?w* 'she goes' R34. (Y *r* and *l* are grade variants of one another.) Examples of the nominalizing function are: *rorir* 'snow' beside *ror*- 'to snow'), *?weskul* 'strap' from ***w?erkw*- 'wrap with a bundle-strap' #37.

Proto-Algic too had nominalizing suffixes homophonous with those of third-person subjects of verbs. In the list that follows, the two endings of each pair are reconstructed separately where evidence permits such separate reconstruction. Otherwise the reconstructible ending of the presumed pair is given, together with the evidence that it may have also had a counterpart.

(292) **-_Vk_ 'nominalizer': PA *-_a:kan_ 'undergoer' (Bloomfield 1946:sec.62), PA *-_ikan_ (M -_ekan_ [Bloomfield 1962:sec.14.66]), W -_ɨk_ and -_ik_, Y -_uk_ in _cwinkuk_ 'sayings, language' (beside _cwinkep_- 'say', with mediopassive -_ep_), Y _pekoyek_ 'blood' (_pekoy_- 'be red'). Algonquian reinforces the ending with the nominalizer **-_Vn_.

Examples are: C _oyaha:kan_ 'person placed', M _a:t<?no:hkakan_ 'sacred story' (with animate gender), _o:cekan_ 'useful person or thing' (cf. _o:tam_ 'she uses something on it'), and _neta:n<hkopecekan_ 'my grandchild' (ML p.236); M _paskuahkihekan_ 'hoe'), W _balɨ̀k_ 'salmon' (root 'to feast'), _łácik_ 'tradition' (root 'tell traditions'), _ciwɨriyú?wɨk_ 'violin playing' (_ciwɨriyú?wɨł_ 'violin bow'), T65.

(293) **-_Vk_ 'third-person subject': PA *-_k_ A499-500, W -_ik_. Examples are: PA *_kemiwanki_ 'when it rains' A696; Wiyot _kłɨtik_ '(it's) hot' beside _kłɨtil_ 'I feel hot, have a fever', _ta_ _kłátik_ 'a hot place', _ŝuwa_ _kasbáwik_ 'how far is it?', _ku_ _takwáwik_ 'where it's shady', _ta_ _thigɨ́łik_ 'where one goes out', _ku_ _danátɨtkɨpłik_ 'where there's a big bunch', _kɨcłáwik_ '(it's) cold', and _sbawi łáwik_ 'it's far away'.

(294) **-_Vm_ 'nominalizer': PA *-_m_ 'agent of a stative verb', e.g., *-_nte:mi_ 'house' beside *_keno:nte:_- 'be a long house' (Proulx 1982:fn.5), W -_i?m_ (_táli?m_ 'what lies there' T26, with secondary laryngealization to help distinguish it from otherwise homophonous _tá?lib_ 'it lies there', with third-person -_ib_ T76). Apparently reinforced with **-_Vn_ in PA *_mo:hkwema:ni_ 'knife' (C _mo:hkoma:n_, NiO _mookomaan_) - compare O _pi:ntɨkkoma:n_ 'knife sheath', and bO _niniskigomân_ 'my snot' beside K _oskikoma_ 'her snot'. This ending is not particularly common, and neither is the corresponding verb inflection (**-_Vm_ 'third-person subject').

(295) **-_Vm_ 'third-person subject': PA *-_m_ (used in a few irregular AI verbs of state or motion), W -_ib_ (in class S-id stative verbs), Y -_om_ (in class 2 o-stem verbs, always reinforced with the regular [e-class] ending). Examples are: B _aippiima_ 'she enters' beside _nitaippii_ 'I enter' (Frantz 1971:18), uB _áikòpum_ 'she's afraid' beside _nit'aikop_ 'I'm afraid'; W _lɨłɨ́lib_ 'she's burned' beside _lɨłɨ́lìl_ 'I'm burned'; Y _kwoyco?m_ 'she goes slowly' beside _kwoycok?_ 'I go slowly', _kohto:liŝomin_ 'she hits' beside _kohto:liŝoh_ 'I hit' R59. Examples with implied objects: Y _ło?m_ 'she takes (something)', _ło:k?_ 'I take (something)'; _newo?m_ 'she sees (something)', _newok?_ 'I see (something)'.

(296) **-_Vn_ 'nominalizer': PA *-_n_ (often with extensions)

'action, product, instrument' (Bloomfield 1946:sec.62); Y -in 'third person attributive' R59 (ku kepoyurin 'swimmer' R65, beside Y kepoyur- 'swim'). Compare W -ɨd 'third-person subject' T76 (lɨ́?gɨd 'she's heavy' beside lɨgáwɨl 'I'm heavy'), W -ad (datbɨlàd 'it's a large building; a large building' T77, 66).

(297) **-Vn or **-Vnag 'indefinite subject' #214. The possible role of **-Vg 'nonimmediate' #203 in preventing the loss of final sonorants by word-shortening in verb inflection is not clear, despite my earlier conclusions on the matter (Proulx 1982:408). Whatever the reason, of the verb endings only **-Vn 'I' #211 is so shortened. If **-Vg is not involved here, its reconstruction in the indefinite subject ending (#214) may not be required for Proto-Algic (though it was surely present in PA).

(298) **-Vł 'nominalizer': W -ìł 'agent', -ɨł 'instrument'; Y -Vł.

Examples are: W kakwìł 'old man, he is old', ɨŝɨrá?wɨł 'pestle' (root **as?ola:?w- 'pound' #120); Y ma?ahskeł 'a spear' (ma?ahsk- 'to spear'), teloyu:ł 'a lie' (with regular contraction of ew-e to u:, cf. teloyew- 'tell lies'), puso:?meł 'a place with an animal smell' beside puso:?molek? 'I smell of skunk or cat', Y cek?ceyoł 'a place of meditation' beside cek?ceyek? 'I sit' Nb.3:3, and Y kɨtkɨł 'trout-fishing pole' (root *kwetk- 'angle' #342).

**-Vł 'third-person subject' #201.

(299) **-...? 'nominalizer': W -...?, Y -...?. This element laryngealizes the preceding element as follows: in Wiyot, glottal catch follows the next preceding vowel; in Yurok, a final obstruent is glottalized and glottal catch precedes a final sonorant. Examples are: W púwutwu?y 'cooking utensils, lit. what someone cooks with' (púw- 'cook', -utw 'with something', -uy 'someone'), kítu?n 'last row on a basket' (kítunɨbił 'she gets through weaving it'); Y ro:wo?s 'a pipe' (ro:wos- 'smoke a pipe'), curp?ɨ?y 'a comb' (curp?ɨy 'comb' (uninflected verb)). It is commonly used to strengthen other nominalizing suffixes in Wiyot (e.g., **-Vm, **-Vn, **-Vy), and, more rarely, in Yurok. In at least one case, this produces a minimally contrastive pair: Y łmeyu?wɨy 'a mean face; a raw, windy day' beside łmeyu?wɨ?y 'a person with a mean face'. Here, the laryngealization seems to mean 'a person having X'.

**-...? 'third-person subject' #218.

(300) **-V? 'third-person subject': W -i? 'third-person subject of relative clause' (kasbúkati? 'how long it cooks', with -at 'cook, heat'; tɨlakáwi? 'how they make it'), Y -o? (łko? 'she gathers acorns', sekitko? 'she's strong' R35). Compare W -V? 'goal

noun' (bíwi? 'food' T64, stem biw- 'eat it' T59; khalɨwɨlú? 'pack basket').

(301) **-V́ 'nominalizer': W -ì (lu?lì 'a leak', with secondary laryngealization - see **-...? #299), Y -oh 'third person attributive' (kohto:liŝoh 'she who hits' R59). Compare W -ì 'third person stative' (tulì 'she's wet').

(302) **-Vl, **-Vr 'nominalizer': (a) Y -Vr (cwinkor 'word, lit., that which is said' beside cwinkuk 'sayings, language', rorir 'snow' beside ror- 'to snow'), tekwonur 'hammer' (**tekw- 'pound' #14 and **-Vn 'postradical increment' - see appendix B);[3] W -il T107 (ku?wíl 'person', root ku?w- 'be alive'); (b) W -aŝ (kɨracbíwaŝ 'pubescent girls' beside hu-ta-kɨracbíwikwɨ?l 'girls' pubescent ceremonies' T232); Y -Vs (punomeyos 'a person groaning in her sleep' beside punomeyo:cek? 'I groan in my sleep', with -o:c 'sound'; ka:mes 'mythical water monster', with root ka:m- 'bad'). See Berman (1986) for further Yurok examples. There is also the third-person ending Y -ol, a free variant of Y -okw in some verbs: hego?l = hegok?w 'she goes' R34, so:tolin = so:tokwin 'she who goes' R60.

(304) **-Vw 'nominalizer': PA *-w 'agent noun' A2074, PA *-a:w 'undergoer' A68, W -a?w 'product' (in phigá?w 'bruises', from **ahpi:g- 'to bruise' #339). Compare Y -ew in mesew 'ointment' beside mesi:gonoyek? 'I'm massaged' and me?repinek? 'I rub or massage something round' (see **mel?- #344). Compare PA *-w 'third-person subject' (Bloomfield 1946:sec.34).

(305) **-Vy 'indefinite subject': PA *-a:y (Potawatomi wapmayɨ 'she's seen' (Hockett 1948:67)), W -Vy (e.g., kɨ́mɨruy 'someone steals food', hɨskɨ́pay 'someone bites a piece'). Note that Potawatomi -ay is used only with a third-person undergoer.

Proto-Algic had theme sign zero for nonlocal objects (see #198), and action on a third person takes intransitive inflection, i.e. 'someone' = 'someone-her'. This element also turns up as a mediopassive derivational suffix ('someone-her' ---> 'she [mediopassive]'), extending analogically to first and second person patients ('I/thou [mediopassive]').

3.3. Origins. It may initially seem surprising that Proto-Algic should have had such a large number of nominalizing suffixes, and that most if not all should be homophonous with third-person verbal endings. But the reason is not long in seeking.

On the one hand, Greenberg (1978:73) has pointed out that demonstrative pronouns frequently get incorporated into the nouns they modify - where they will become gender markers in a language with gender, and otherwise simply markers of nominality. Such markers of nominality then tend to be used to nominalize verb stems. On the other hand, he (ibid. p.75) also finds that demonstratives commonly replace third-person pronouns, and it has long been known that personal pronouns are a source for verb affixes marking person. In addition, I have argued (Proulx 1982:sec.1.2-1.3) that Algic syntax makes likely the evolution of nouns derived from verb stems into independent verbs (via their use as predicators).

It is not always clear which of these routes has been taken in a particular case, but there can be little doubt that demonstratives and other pronouns are the ultimate source for the nominalizers and third-person verb endings we have been considering. Compare:

PRONOUN	NOMINALIZER	3-P SUB. OF VERB
**m- 'proximal locative' #244	**-Vm	**-Vm
**n- 'distal locative' #245-246	**-Vn	**-Vn(ag)
**w- 'this' #239-241	**-Vw	(PA *-w)
**y- 'that' #242-243	(W -V?y)	**-Vy
**l/r- 'like that' #255	**-Vl/r	(Y -ol)
**t- 'the one (first mention)' #253	(PA *-t)	(PA *-t)
**k- 'the one (later mention)' #251	**-Vk	**-Vk
**?- 'relative pronoun' #259	**-...?	**-...?
	(W -V?)	**-V?
(W ɨ- 'interrogative')	**-Vɨ	**-Vɨ
(Y ho 'to')	**-V	(W -ì)

These pronominal elements were evidently followed by inflectional vowels in Proto-Algic, but it is a moot point whether any of these marked gender in the proto-language itself. However, they clearly do in Algonquian, and there the incorporation of pronominal elements into nouns and verbs is no doubt the main route by which gender comes to be expressed.

In any case, Greenberg's hypothesis can be refined a bit at this point: it is not that demonstrative pronouns always become gender markers in a language with gender, and simply markers of nominality in those lacking it. Where the pronouns in question inflect for gender, and both the pronominal root and its inflection are incorporated into nouns or verbs, the former is likely to become a marker of nominality even as the latter comes to express gender.

Five of what appear to be these same pronominal elements (the first four and **k-) are also used as postradical extensions of verb roots (see appendix B). Evidently, their tendency to become incorporated into other words is ancient - dating to a time when verb roots could function as independent verbs. It is not clear whether they were used as nominalizers at that time.

4. Primary Noun Stems

Primary stems consist of a general root, optionally a medial, and nearly always a final (or rarely two). Medials are always relatively concrete in meaning, finals usually abstract.

4.1. Finals. A few nouns end in an abstract final resembling one of the nominalizers or third-person endings described in sec. 3.2 above. A good example of a noun attested with more than one such final is **atk-, **aĉk- 'earth, land' #349, medial **-atk. It is found primarily with **-ey, as in PA *atkyi 'land' A228 and Y łkey(om) 'clay' and łkeyomi? 'it's dirty', but compare Y łkeł 'land' and łkoł 'mud' (with **-Vł), and Y skelomoyek? 'I'm covered with dirt' Nb. 4:10 (with **-Vl). The last Yurok form shows the productive Y ł to s alternation initially. The bare root is seen with locative **-ayew in Y hełkew 'a place toward the mountains', while the medial is seen in W -ɨtk 'land' (bɨcɨ́wɨtkɨk 'on dry land'). Cf. PA *aŝiŝkiwi 'mud' (F aŝiŝkiwi, C asiskiy, Mc sisku), perhaps with **ar- 'so, such' #255 prefixed, and final **-Vw.

Other words, which I earlier interpreted as showing regular phonological correspondences (Proulx 1984:177), match **-Vł, **-Vl, and **-Vn. A good example of this type is PA *-to:ni 'mouth' with final **-Vn, W -lùl with final **-Vl, and Y -luł with final **-Vł. The dependent medial is **-tlo: or **-tlew 'mouth', medial **-ew (Y -ew as in ?ek?ewetek? 'I hold it in my mouth'). Another of this type is PA *-tpani (Sh -?pani), Y -tp?oł 'vulva' (dependent stem **-tp?). Finally, **cawoni 'fishnet' #341 has a final **-Vn, cf. Pe ĉawáhpɨnikan 'net sinker' (Seeber 1983:301).

Two longer abstract finals are reconstructible:

(306) **-tkan 'abstract final'. This ending probably consists of **-Vĉk, **-tk 'augmentative-pejorative' (see #291)

plus the nominalizer **-Vn. Found in **-skwVtkani 'neck' #267 beside medial **-Vskw #165. PA (with *-ɨkwe:kani) shows a loss of *t between a long vowel and obstruent. Note the same loss in Ojibwa (Bloomfield 1957:53) and compare losses of *n in the same environment (Proulx 1984:196). This final regularly gives PA *-kan (with analogical loss of **t in environments where it would not drop by sound change), but the archaic form is also preserved in PA *apitkan 'pack strap' (M ape:hkan, RhO bikan).

This may be the source of the noun final PA *-kan, used 'to generalize a meaning and hence reverse semantic specialization' (Proulx 1984:189), i.e., to include a larger area in a body-part term (compare C -i:picikan 'gums' with -i:pit 'teeth', and -so:kan 'buttocks' with -soy 'quadruped's tail'). An augmentative nominalizer is appropriate here since its function is to expand a semantic field. (Pre-PA long closed vowels are shortened in PA, except in the first syllable of a stem [Proulx 1984:193].) If **-tkan is in fact the source for this PA *-kan, the use of this suffix in Algonquian is not altogether different from its use in Wiyot to mark kin terms of the second ascending generation: in both cases the referent is marked as being displaced from the center of a semantic field (counting EGO as the center of kin terminology). This would then be a basic sense of 'augmentative' in Algic.

Frequently, the extended has simply replaced the simple form. Examples are: PA *-tpike:kani 'rib' A1598 (from **-tpeyekhe:-tkani) beside PA *-tpikani 'rib' #91 (from **-tpeyekhe:-ni, with archaic replacement of **e: by *a, see Goddard 1974); Ms mohpanag and mohpân̄neg 'breast', Nr wohpanagash 'breasts' from PA *-hpa:le:w-Vkani (see **-hpa:le:wi 'in front' #312); Mc usk'nik'n from PA *weŝkwan-ikani 'elbow' (see **weĉekwani #322). Note that *e:w-V contracts in Massachussett and Narragansett. PA *-kan, with various link vowels, comes to be widely used as an equivalent of simple *-n.

(307) **-wan, **-wen 'abstract final'. Found in two cases of dependent noun stems derived from medials: W -kwhɨd, and Y -kwen from **-k medial 'chest (body part)' #140; and PA *-skitweni from medial **-Vckit, **-Vĉkit 'throat' #152. In one case, addition is to a dependent noun stem: PA *-ɨkwani 'chest' from **-ɨk dependent noun 'chest (body part)'.

Rarely, a noun final is concrete in meaning. The only examples are **-ay 'skin' and **-V? 'tree, stem'. Both also occur as medials, and, as finals, follow medials similar to themselves in meaning (to the extent that the meaning of the preceding element can be ascertained). Perhaps these sequences should be thought of as compound medials, rather than as genuine medial-plus-final combinations. They are exemplified in the following:

**waSlak-, **waSlek-, **waSrak-, medial **-erek- and **-arek- 'skin' #280, mostly reinforced with the final **-ay 'skin' #53: (a) PA *wa?lakaya 'skin, scale' (C wahyakay 'scale', Mc wa:xi 'skin'), (b) Y srahkwoh 'loincloth', slekwoh 'shirt' and slekwslekw 'clothes', (c) PA *wa?ŝakaya (C wasakay, r10 waŝakay); (d) PA *-eŝkaya (in *-łameŝkaya 'inner skin, membrane' S176), W wɨ́tkay 'skin' (incorporation the third-person prefix), Y skoy 'strip of buckskin'.

(308) **-V? 'tree, stem': W -áti? 'tree, wood' (máti? 'wood', wikwáti? 'pine or fir trees'), Y -o? 'tree, stem' (tɨ:pɨnɨ? 'fir tree' beside te:po 'tree' and te:ponoł 'in a forest', pɨkwɨnɨ? 'Indian asparagus' from **pekwan- #69, pkwo?olo? 'maple' (cf. pkwo?ol- 'emerge through a barrier', perhaps a reference to its sap). Also found in **thi?ema:?i 'elderberry (bush)' #66. Cf. **-Vlt 'l-dimensional'.

4.2. Medials. Noun medials are often followed by what Bloomfield (1946:sec.59) calls 'a final of the form zero'. However, these often end in one of the sequences described in sec. 4.3 below. Moreover, in the case of **-ałw 'plant' we can probably segment **-Vw 'abstract final': W -ɨlat beside -ɨłwat 'plant' must result from an optional lack of the final before the secondary final W -at. Reconstructible noun medials are:

(309) **-ałw 'plant': PA *-ałwi (Sh -alwi in mŝke:kwalwi 'lake plant' beside mŝke:kowali 'lakes'), W -ɨłwat and -ɨłat 'plant' T68 (e.g., laŝɨlwat 'strawberry vine' beside laŝ 'strawberry', bikhwɨlɨ́łwat 'salalberry bush' beside bikhwɨl 'salal berry'; wákɨłat 'pepperwood tree' with haplology beside wakɨl-'peppernuts'). Wiyot adds **-Vlt 'l-dimensional'.

(310) **-ayeł 'liquid': W -éł (e.g., hatbútkayɨwéł 'muddy water' beside hatbútka?w 'mud', siswéłi? 'coffee' beside sisw 'dark'), Y -ɨy(e)ł (e.g., lɨ?ɨgɨył 'dark brackish water' beside lo?og 'coals', lɨhpɨyeł 'saliva, spittle' beside lohp- 'come in lumps').

(311) **-Vyaki 'kind, sort, way, place, time': PA *-ayaki (F nekotayaki 'one group or set', ni:ŝwayaki 'two kinds', C pe:yakwayak 'one way, kind, place', nistwayak 'in three ways, kinds, places', ne:wayak 'in four ways, fourfold'), PA *-iyaki (in *(a)wiyaka 'someone, anyone' A220, M we:yak 'all sorts, any sort, some sort'), Y so:k 'that sort' (root **ar- 'like that' #255. A contraction of Proto-Algic *aya to Y o: seems plausible, as this is the established reflex of *a:wa (Proulx 1984:186).

Others, part of larger reconstructions, are: **-Vt 'foot'

#167 in **-tka:ti 'leg' #10, **-(e)rek- 'skin' in **waSlek- 'skin' #280, **-Vlt '1-dimensional' #281 in **sema:lt- 'bow' #282, **-ehtl? 'by ear' in **ŝepehtl?e 'ear' #92.

4.3. Unanalyzable Nouns. Most nouns in this category end in a sequence resembling one of the nominalizers or third-person endings described in sec. 3.2 above. Apart from this resemblance, however, there is no basis for segmentation. A some nouns end in sequences that lack even this resemblance (sec.4.4).

NOUNS ENDING IN **Vw ARE:

**kela:hkewe, **kegela:hkewe 'goose, geese' #106.

**kenlegewe 'hawk species (brownish)' #75.

**le:k?awe 'sand' #72.

**wa:wa?lewe 'egg' #3.

**-tko?we, **-cko?we 'blood' #126 belongs here too, if the glottal catch is secondary in Wiyot (as it often is).

(312) **-hpa:le:we 'front part': PA *-hpa:le:wi 'chest (body part)' (Sh ho?pale:wa:ki 'their chests' and nim?ŝipale:we 'I have a big chest', Mi palawi 'chest', M -hpa:n<:w 'thorax, chest', compare Ms mohpanag and mohpân̄neg 'breast', Nr wohpanagash 'breasts', Mah -achpássei 'breast, side'); Y -poyew 'ahead, in front of' (e.g., nekah nepoyew 'in front of us', Robins 1958:136). An extension *-kan is added in Massachussett and Narragansett, which later loose a final PA *Vn. For a replacement of **l by Y y, compare Y keyom- (in free variation with kelom-) from **kelom- 'turn' #49.

(313) **-wi:wa 'wife': PA *-wi:wa (niO niwiiw 'my wife'), W dúwiw 'my wife'. **w?i:wali 'his wife' (with obviative **-ali): PA *wi:wali A2257; W wiwɨ?l T152. Also **wi:w- 'take or have as wife, fuck': PA *wi:wi- S243 (also pseudotransitive, see Wolfart 1986:386-389), PA *wi:wim- TA 'have or take someone as one's wife' (bO nin wiwima 'I take her for a wife', C wîwim- [ibid., p.387]), W talɨ-wi?wamiɬ 'he's fucking her' (ta-'durative' T88, automatic -lɨ T27, -am '3-obj. theme' T74). While the Algonquian stems are usually glossed to reflect the social rather than sexual relationship, both are implied: C ê, ê-kî-ta-têpîhkâkot ê-kî-wîwimikot,... 'Now, when the other had had enough of copulating with him,...' (ibid., p.389). Cf. W wi?yīɬ 'she's pregnant and married'.

(314) **-o:teTkohc?riw-, **-o:teTkoht?liw- (T = ɬ, l, t) 'kidney': PA *-o:te:Hkohsiw- (H = ɬ, h, t) (bO odôdikossiwan 'her

kidney'). W ucɨ́ckɨ?rɨwɨ?l 'her kidney' (grade 2). Note: O uto:nɨkkossuwan is contaminated by PA *-o:łeła 'kidney' (M neto:nene:hsak 'my kidneys', Ab odolló 'her kidney', A betííθiθ, Ch nahtsestsétatse 'my kidney').

(315a) **asewe 'projectile point': PA *ałwi 'arrow' A214, W hɨ́s 'harpoon head'. There is also a verb, **asew-, **esew-, **eŝew-, **aŝew- 'point': (a) PA *ało:h- (F ano:h-), (b) PA *eło:h (C ito:h-, M eno:h-) 'point' (with final *-h 'by tool' B80), (c) W ŝuri- (with ri of unknown origin, as in ta-?ŝuriɬ 'she's pointing' and ta-?ŝurímiɬ 'she's pointing at it'), (d) Y cɨwɨhs- (with final -Vhs).

Compare C itwahikanicihcân 'index finger' (Wolfart 1987:37), and PA *ło:hika '7' (F no:hika, M no:hikan, Ps ɨluwikɨnɨk, Mc elɨwik'nik) - from Pre-PA *eło:hikani 'pointer' with regular word-shortening, and loss of initial **e before a sonorant. Mc nt'luwik'n 'my finger' shows retention of this **e after a prefix, and it is analogically restored in verbs from their changed forms (as well as in the Micmac and Passamaquoddy words). Micmac and Passamaquoddy also add the number suffix *-yeka (Siebert 1975:303).

(315b) Somehow associated with this root is **a:?lewe, attested by Y horew 'something with a pointed end like an arrow' (Berman) and W á?lɨw '7'. Possibly, **a?rew- gave **a:?lewe by archaic ablaut and a shift of consonant grade; and all the other forms by shifts of vowel grade, a secondary change in consonant grade in Pre-Yurok (*s to *ŝ), and reanalysis of **ar as **ar- 'thither' #255 in Algonquian.[4]

(316) **pełełkewe, final **-Vpełełkewe 'rock': W płɨ́tk 'rock', płɨcwicac 'pebbles', płɨ́twakw 'on the rock', Y pełkoł 'gravel' (Gensler 1987:G.3.e.vi), PA *-a:pełkwi 'rock, stone' A53 and medial *-a:pełk 'stone, metal' A51, and compare Pe màhsihpskw 'flint' S57. Both Yurok and PA show haplology (unless Wiyot has a different initial, such as **pel- 'big'). For segmentation of Y -oł, compare łkoł 'mud' (**atk-, **aĉk- 'earth, land' #349).

(317) **w?echowe, medial **-thow 'quadruped-tail': (a) PA *-so(:)wi (F -so:wa:nowi, C -soy (but C oso:wa:niwaskwah 'horse-tail hairs'), M -so:w, O - so:wa:nak, Sh -θowa:low, Mi anzoyi); (b) W (hu)wɨthi?l 'her tail' (grade 1). Evidently *ow drops in Wiyot after a consonant. Compare PA *-twiye: medial 'tail' A983 (possibly adding link **i:, productive body-part *-e:, and automatic *-y).

(318) **y?etkwe:we, **y?eĉkwe:we 'maggot': (a) PA *wetkwe:wa S248, W yutw, (b) Y ?yekwɬ 'maggot' (with metathesis). See 'elbow' #322 and 'fish-tail' #74 for another case of W u from **e

before **tkw.

NOUNS ENDING IN **Vy ARE:

**pe?meye 'grease' #24.

**wareye, **wegeleye 'navel' #110.

(319) **rey(?)-, **ley(?)- 'ropelike': PA *ŝe:- 'cordage' (incorporating link *-e:), Y le(?)y(es) 'snake', where Y -es is a suffix (cf. Berman 1986:420).

PA *ŝe:- 'cordage' (Goddard 1986:fn. 30), e.g., C se:stak 'yarn, twine, thread', se:kipatwa:n 'braid of hair', se:napa:n 'ribbon', se:ske:pison 'garter', M s<?nap(yak) AN 'hemp, cord of dogbane, spreading dogbane', s<?nepa:n 'ribbon, silk, satin', s<?skakot<w 'it (as hair) hangs loose'.

NOUNS ENDING IN **Vm ARE:

(320) **elka:yome, **erka:yome 'bat (animal)': W ĉkayɨb(íŝ) (grade 3, with **-Vr #302), Y skoyom.

NOUNS ENDING IN **Vn ARE:

**-li:ne 'eye' #45.

**mene, **megene 'berry, berries' #73.

**pekwane- 'rhubarb, Indian ...' #69.

**-sene 'breast' #2.

**-tpeyekhane 'rib' #91.

**w?eĉekwane, **w?eĉegekwane 'fish-tail' #74.

**w?ehtelkwene, **w?ehtelkwane, **w?ehterkwane 'branch' #38.

**w?ełkane 'bone' #26.

**w?ełkwene, **w?ełkwane 'liver' #35.

(321) **pipo:ne 'winter': PA *pepo:ni (F, Sh pepo:ni, M pepo:n, O pɨpo:n, cf. C pipon, with short o); Y kipun. Also **pipo:n- 'be winter': PA *pepo:n- A244, Y kipun-. The initial **p is dissimilated to initial Y k by analogy with Y kisen- 'be summer', kyah 'spring', and kesomeł 'autumn'.

(322) **weĉekwane, **wegeĉekwane, **wecekwane 'elbow': PA

*weŝkwani, *-o:ŝkwani, *wi:ŝkani, *-o:skwani W wɨtuk (grade 1), wɨtukɨdɨ?l 'her elbow'. Cf. Y pɨwkwiŝ 'elbow'.

PA *weŝkwani 'elbow' (Pe wɨskwan), *wi:ŝkwani (uD wi:skon, Mi wihkwan, Ms meesk (with *m- for *w-)), *-o:ŝkwani (F oto:ŝkwaneki 'at her elbow', C nito:skwan 'my elbow', Ch nahtse?oonots 'my elbows', Mc usk'nik'n (extended), A bétson (reflecting short *o), PA *-o:ŝkwani (O nɨnto:skwan 'my elbow'). F neto:ŝkwani and M n<htu:hkwan 'my elbow' have unexplained *ht. Compare also B moxkínistsis 'an elbow'.

NOUNS ENDING IN **Vl ARE:

**ĉo:la 'aunt, maternal ...' #48.

**meyehkhwel-, **meyehkhwale 'weep, mourn; tear' #89.

**pitekwle, **pitekwale, **piĉekwre 'basket' #111.

**wa:kele 'peppernuts' #101.

(323) **phele 'flint': W phɨl, Y pa?ar(ik) (with Y -i? infixed).

(324) **wel-, **welakhw-, **wegel-, **wegere 'fat': PA *welakw- (Sh holakw-, M ona:kow, K onakwia and F anakwi:wa 'she is fat'), *wi:len- 'be fat' (with *-en 'II final') A2234, *wi:ŝi (C wi:sih 'belly fat'); W duwɨlákhwɨ?lɨw 'my (animal's) fat'; Y wel, welogo: 'fat'.

NOUNS ENDING IN **Vł ARE:

**mey?ełe 'nettle' #62.

(325) **ĉep?eł-, **ĉa:p?ełi, **-ĉp?ełe 'eyelash': (b) W ĉapł, (c) Y -łp?eł.

NOUNS ENDING IN **Vg ARE:

**-tkanĉege, **-ĉkanĉege 'fingernail' #134, medial **-ekanĉeg #141.

**w?etkanĉege, **w?eĉkenĉege 'hoof, claw' #39.

**metlage, **megetlege, **megecrege 'dung' #52.

**w?ataphege, **w?eta:phege 'root, fine ... used as cordage' #102.

NOUNS ENDING IN **Vk ARE:

**e?m?i:?ke 'pigeon' #121.

**w?etl?eyepi:teke, **w?etl?eyepi:take 'root' #94, 332). Or alternatively, **w?etley?Vpiteke.

(326) **-tapti:take, **-tapti:teke 'backbone': PA *-ta?taka:w(i)kani, W tɨptítk 'salmon backbone dried with some flesh on it'. PA haplologically drops **ti: before **ta, and compounds this stem with PA *-a:wikani of the same meaning.

PA *-ta?taka:w(i)kani 'backbone': F -tahtaka:kwani (wk ---> kw), O -tattɨka:wɨkan, Ch -estahtoóno PA *-a:wikani 'backbone': C -a:wikan, Mc -o:wik'n, cf. Ps wawikɨn, and Sh wa:ka:wikane 'she has a crooked back'.

(327) **-tecake, **-tegeteke 'buttocks': (a) Y -cɨk 'bird's tail' (with analogical loss of initial *te - see Proulx 1984:169), (b) PA *-ĉyetki S252. With metathesis, the Lake-Eastern languages have *-skeĉyi (grade 2). Compare also PA *-ŝyi:kani 'rump' S169 (as if from **-ĉegegetekani).

NOUNS WHOSE ENDINGS RESEMBLE DIMINUTIVES ARE:

**?e:nece 'shell, bivalve ...' #84. Cf. **-énc 'diminutive'.

**mekwehce, **megekwehce 'snail' #33. Cf. PA *-ehsa 'diminutive'.

(328) **wayece OR **wayehce 'dog': W wáyic, Y wɨyc(?ɨks), with -Vks 'child' as in ca:nu:ks 'baby'. Compare PA *-ay- 'dog', diminutive *-ehsa.

No nouns reconstructed thus far end in sequences resembling the remaining nominalizers **-...?, **-V, or W -V? - unless it be **nepi?ye or **nepi?i 'water' #67.

4.4. Nouns Ending in Anything Else. There is some hint that a final postconsonantal **w in some nouns is a separate element in origin, comparable to a final **Vw (see sec.4.31). For example, there is a PA *-aŝk beside *-aŝkw 'brush, grass, herb' #329 below). This should perhaps not be surprising, as there are signs of Pre-Proto-Algic ***e being lost in Proto-Algic - at least as reconstructed (Proulx 1984:202). This is seen when **a (grade 2-3), which normally alternates with **e (grade 1), instead alternates with zero as in 'root' #94. Thus, compare **tak and **tk in Y ?wɨ?łpitɨk and W uwɨlápitkɨ?l 'root'. Similarly, if **wa is an a-grade by-form of the prefix **we- (see sec.5.2 below), and **S is a prefix receptor (see sec.2 above), then medial **-arek-

(grade 2-3) 'skin' suggests that an initial ***e in ***-elek (grade 1) was lost from **waSlek- 'skin' #280. Possibly, the same could be true in some cases of postconsonantal **y and **l.

NOUNS WITH THESE POSSIBILITIES ARE:

**ape:gw-, medial **-a:pe:gw 'male' #284.

**atkehk?we 'pot' #28.

**ihkwe 'louse' #9.

**kega:r?kwe, **kaga:r?kwe, **kaga:l?kwe 'gull' #135.

**nepi?ye or **nepi?i 'water' #67.

**pele:gwe 'large bird' #285.

**penekwe 'powder' #83.

**s?e:gw... 'madrone' #286.

**-tekwle, **cekwre 'heart' #112.

**wałanye 'tail' #22.

**wenli?a:gwe 'coals, charcoal' #289.

(329) **ma:tkwe, medial **-Vĉkw 'head': (a) PA *-Vtkwe: (with postmedial *-e:, in *-etkwe: [Hewson 1974:item 71], and Sh nikiθa?kwe:na 'I wash her head' and C tapahta:skwe:piw 'she sits with lowered head'), (b) Y mołkwoh 'head' (-oh 'round thing').

(330) **merkwe, **markwe 'grass, herb, medicine': (a) Y meskwoh 'medicine', cf. meskwoyek? 'I've been given medicine or medical aid' Nb.5:39; (b) PA *maŝkw-'plant, herb, grass' S166, *-aŝkw (F inaŝkwi 'such an herb', C wi:hkaskwa 'sweet grasses', M -askw, O -aŝkw, Mc kata:skul 'eelgrass [pl.]'). Compare also PA *-aŝk (F -aŝki 'brush', M -ask←nw 'grass, herb').

(331) **weski?tye OR **weskity?e 'hollow tube used in smoking': PA *wełkiĉyi 'pipestem' (C oskiĉiy, O okkiĉ), Y ska? 'pipe scabbard' (with initial **we dropped as if a third-person prefix). Cf. NiO okijaabik 'stovepipe, tailpipe', and C oskici:hka:n 'stovepipe'. The semantics casts doubt on this reconstruction.

THE REMAINING RECONSTRUCTED NOUNS ARE:

**pegemi:pe 'knife, stone ...' #114.

**wetempe 'head' #90.

**y?o:nĉhe, **y?o:neĉh- 'boat' #118, medial **- ?o:nĉh #151.

(332) **mehŝe 'fire': PA *mehŝi 'firewood' S247, W bɨ́s (grade 1), Y mec.

(333) **rente (OR **sente, **ŝente) 'evergreen tree, brush, or bough': PA *ŝenta A1986, Y stostek? 'small fir tree'.

5. Inflection

The most elaborate inflectional machinery reconstructible for Proto-Algic nouns is that used for allocation. In addition, there are 3 locative suffixes, and 2 that may have reflected gender.

5.1. Allocation. Proto-Algic inflection for possession differs somewhat in independent and dependent nouns, and the latter class has subcategories with further differences. Since the subclasses are based on sometimes subtle semantic distinctions, which may be cultural and hence more or less valid for a given group, the same noun is often treated differently from language to language. In addition, however, it seems likely that some of the rarer variants may sometimes simply have escaped recording.

Dependent nouns typically specify entities whose very definition implies allocation, such as kin, personal property, and parts of prototypically-human wholes. They take PERSONAL inflection for a first, second, or definite third person owner. Some of them, notably those naming body parts, also inflect for an indefinite third-person owner. This last type of inflection is sometimes incorporated into a root (see Bloomfield 1946:sec.103). Independent nouns take optional personal inflection (for definite persons only).

An example of personal inflection is dependent **n?etka:te 'my leg', **k?etka:te 'your leg', **w?etka:te 'her leg', **metka:te '(an animal's) leg (after slaughter)'. An example of possible incorporation into a root is Y meca:nep 'tansy' (cf. ta:nep- 'freshly green, as the new leaves in spring'). Another is **mehŝe 'fire' #332 (see Teeter 1964:sec.4.12). These stems are often hard to distinguish from ordinary stems in initial **m.

Dependent nouns specifying parts of nonhuman wholes take NONPERSONAL inflection for a definite third-person owner, and, optionally, secondary personal inflection for a human owner. An example is **_w?etl?eyepi:teke_, **_w?etl?eyepi:take_ 'root' #94. One from Yurok, which shows the part-of-whole semantics nicely, is _kohtoh_ _weci:sep?_ 'one flower' beside _kohtek?wo?n_ _ci:sep?_ 'one flower-bush with flowers' (Haas 1967:359). Here, the prefix marks the flower as part of the flower bush.

In many cases a noun which commonly specifies a part of a nonhuman whole, is also used for a human body part. An example of this is **_wetempe_ 'head' #90. Presumably the prototypical referent here is the animal head (a choice food item). However, Algonquian has a structurally-contrasting dependent counterpart of this noun (without the initial **_we_-), e.g., Sh _hotepi_ 'her brain' beside C _otihpi_ 'a brain' - the dependent stem taking inflection for an indefinite owner (Ab _metep_ 'tête'). (See #90 for a discussion of the semantic shifts in this item in some languages.) Wiyot instead has secondary inflection for allocation (_du?wɨ́tbɨt_ 'her head'). It is not clear if synchronically the Wiyot reference can be to the human's own head as well as her animal's head - if so this is probably a secondary simplification of the inflectional machinery, the Proto-Algic situation being preserved in Algonquian. Another example is personal **-_tkanĉege_, **-_ĉkanĉege_ 'fingernail' #134) beside nonpersonal **_w?etkanĉege_, **_w?eĉkenĉege_ 'hoof, claw' #39.

Notice how personal inflection for an indefinite owner and impersonal inflection both produce forms glossed 'a head'. It may be that even for native speakers the two forms are synonymous, which would explain why both are rarely if ever attested for the same language. More likely, though, there is a difference in the flavor of the two terms: the former emphasizing that the head once had an owner (hence, personal inflection), the latter regarding it simply as a part of some whole.

5.2. Prefixes. There are only 4 prefixes: **_n?e_- 'first person', **_k?e_- 'second person', **_w?e_- 'third person', and **_mê_- 'indefinite person' ##128-131. In a few cases, **_e_ in these prefixes is absent before a vowel (or is replaced by a vowel). The status of the glottalization in these items (as in several others) is uncertain. The second-person prefix is regular in nouns, but Yurok has simple _k_ in the second-person personal pronoun. In the case of the third-person prefix, Yurok (the only language that would attest it) lacks the glottalization in some cases of nonpersonal inflection, and thus it is not reconstructed: EXAMPLES WITH **_w?_.

**_w?ataphege_, **_w?eta:phege_ 'root, fine ... used as cordage' #102.

**_w?ecehp?ehkwe_, **_w?etahp?ehkwe_ 'backbone' #312.

**_w?eĉekwane_, **_w?eĉegekwane_ 'fish-tail' #74.

**w?echowe, medial **-thow 'quadruped-tail' #313.

**w?ehtelkwene, **w?ehtelkwane, **w?ehterkwane 'branch' #38.

**w?eɬkane 'bone' #26.

**w?eɬkwene, **w?eɬkwane 'liver' #35.

**w?erkw-, **w?egerkw-, **w?egelkw- 'bundle-strap' #37.

**w?etkanĉege, **w?eĉkenĉege 'hoof, claw' #39.

**w?etl?eyepi:teke, **w?etl?eyepi:take 'root' #94.

EXAMPLES WITH **w.

**wa:kele 'peppernuts' #101.

**wa:wa?lewe 'egg' #3.

**waɬanye 'tail' #22.

**wareye, **wegeleye 'navel' #110.

**weĉekwane, **wegeĉekwane, **wecekwane 'elbow' #321.

**wel-, **welakhw-, **wegel-, **wegere 'fat' #324.

**wenli?a:gwe 'coals, charcoal' #355.

**wetempe 'head' #90.

5.3. Subordinative Themes. Some allocated verbs require suffixes forming SUBORDINATIVE THEMES when a further suffix follows. Commonly this further suffix is the obviative **-Vl #257, which signals a third-person possessor. Two subordinative theme suffixes are reconstructible:

(334) **-ag, **-eg 'subordinative theme': PA *-ay and *-y (Proulx 1982:sec.2.3), W -ɨg T66. Examples: M nen<:?seway 'my testicle' (beside F neneŝiwa), F neŝemya 'my daughter-in-law' (beside C nistim); W halɨ-wɨtkɨnɨgìɬ 'on her nails' T82, stem wɨtkɨn 'nails' T67. This reconstruction replaces **-Vg 'nonimmediate' #203. Compare also **-eg in **w?ataphege 'cordage root' #102.

It seems likely that W -ɨg- and -iy- 'nonimmediate' (always laryngealized T38, 58) originate in subordinative themes as well. They are chiefly used in subordinating a possessed to a possessing entity (in some dependent nouns, probably of verbal origin), and a dependent verb to a superordinate verb or predicator. Examples: W wɨ́pti?yɨk 'my tooth' (laryngealized, with dependent root -ɨ́pt 'tooth' and the first-person ending **-Vk? #209), kɨ́mɨrɨ?gɨk 'if I steal' (root **kemotl- 'steal' #21). They are also used on some kin terms referring to the deceased (much as inaccessible inflection is in Algonquian). Thus, for example, W kúĉkɨdi?yɨm 'your deceased grandmother' T40 (kúĉkɨdɨ?l 'her grandmother' T146).

(335) **-em 'subordinative theme': PA *-em 'possessive theme' A304 (e.g., wetehkwemali 'her louse' A2204 with obviative *-ali beside *ehkwa 'louse' A284), W -ɨb 'subordinative theme' T66 (e.g., ku kí?yɨbɨ?l 'her hat' beside kí?y 'basketry cap' T19). Wiyot subordinative themes are used in locatives as well as possessed nouns, but are absent from word-final position - and thus from nouns with local possessors. In PA, they derive dependent from independent nouns.

Wiyot has some additional subordinative themes (Teeter 1964;sec.4.57): -(ɨ)w, -ɨd, -..?. See **-ata:gw 'belly' #283 for an example after a stem with an Algic etymology.

5.4. Obviation. When an animate noun in Algonquian, or any noun in Wiyot, inflects for a third-person possessor, a terminal obviative suffix is added. **-Vl 'obviative' #257 is used with singular nouns in Algonquian, and, laryngealized, with all nouns in Wiyot. It is not clear whether or not PA *-VhV 'obviative plural' is related to the laryngealization found in Wiyot.

5.5. Locatives. Proto-Algic has at least 3 locatives:

**-e: 'temporal translocative (during)' #268-269.

(336) **-Vnki 'punctual spacial locative (in, at)' #34): PA *-enki A312, *-a:nki (M -a:h ML:75, in M k<?cekamyah 'by the sea', O -a:nk eO:41), W -akw T82, Y -ik (e.g., ?welinik 'in her eye').

(337) **-ayewi, **-eyewi 'spacial adlocative (toward)': PA *-ayewi (Ms wompanniyew 'toward the east', cf. mD wa:ppɨne:wɨnk 'east'), Y -ew, PA *-i:w (Ps -iw, as in pithawiw 'upriver' beside pithawiye 'she goes upriver'). Cf. Y -ow in pecow beside pecik 'upriver'.

5.6. Gender. There are traces of what appear to be inflection for personal gender (**-a in #84) and nonpersonal gender (**-e in #95). Such a gender distinction is also implied by the division of verbs into UNIPERSONAL (TA in Algonquian), and BIPERSONAL (nonTA in Algonquian). More importantly, the abstract finals of many nouns resemble erstwhile pronouns, which certainly did have gender suffixes (see sec.3.3). Presumably, these suffixes would have been incorporated into the nouns along with the finals.

5.7. Vocatives and Plurals. PA and Wiyot have (noncognate) vocative inflection, and PA and Yurok have cognate means of pluralizing some verbal nouns:

(338) **-eg- 'plural': PA *i:ł- 'so (plur.)' beside *eł- 'so' A369 (with contraction of **ege to PA *i:), Y -eg-. Examples: M ayi:nek<netua? 'ones who are so big' beside <:nek<net 'one so big', Y cegeykeni 'ones who are small' beside ceykeni 'one who is small' R32. In Yurok, this extends to some nouns whose verbal origins are no longer evident, e.g., pegerey 'old women' beside perey 'old woman'. In Yurok, this element is also used to nominalize a verb stem: nega? 'surf-fish net' (na?aw- 'catch surf fish'), swegeł 'gunshot' (swełk- 'burst').

Reduplication, sometimes combined with archaic ablaut, is similarly used. Citable examples are mostly verbs, but they presumably have unrecorded nominal counterparts (participles, etc.): M mama:hkiwan 'they (inanimate) are big' beside mahke:yaw<sew 'she is big of body', Y pope?l 'they're big' (attributive popoloh 'large round things') R96. Archaic ablaut, found in some nouns, may have had a similar function.[5]

NOTES

1. Languages, their abbreviations, and the sources from which they are generally cited are as follows: Abenaki-Ab-Laurent (1884), Day (1964); Plains Cree-C-Bloomfield (ms.); Swampy Cree-swC-Voorhis (1984a); Western Cree-fwC-Faries and Watkins (1938); Delaware-D-Goddard (1969)<uD=Unami, mD=Munsee>; Fox-F-Bloomfield (ms.); Kickapoo-K-Voorhis (1974); Loup-L-Day (1975); Mahican-Mh-Mastay (1982); Menominee-M-Bloomfield (1975); Miami-Mi-Voegelin (1937-40); Micmac-Mc-Proulx (field notes), DeBlois and Metallic (1984); Natick-N-Trumbull (1903); Ojibwa-O-Bloomfield (1957); Central Ojibwa-bO-Barraga (1878); Western Ojibwa-NiO-Nichols (1979); Central and Eastern Ojibwa-RhO-Rhodes (1985); Passamaquoddy-Ps-LeSourd (1984); Penobscot-Pe-Voorhis (1979); Proto-Algic-PAc-Proulx (1984); Proto-Algonquian-PA-Aubin (1975), Siebert (1975); Saulteaux-wO-Voorhis (1984b); Shawnee-Sh-Voegelin (1937-40); Wiyot-W-Teeter (1964); Yurok-Y-Robins (1958), Proulx (field notes).

PA reconstructions found in Aubin (1975), Bloomfield (1946), and Siebert (1975) are respectively identified with the letters A, B, and S plus the item number. ML = The Menomini Language (Bloomfield, 1962), eO = Eastern Ojibwa (Bloomfield, 1957).

Transcription generally follows that of Siebert (1975) for Algonquian, Teeter (1964b) for Wiyot, and Robins (1958) for Yurok. However, the following changes have been made: PA *ƚ is written for *θ, PA *s for *ç, PA *t for *x, PA *? for *h between vowels, W ? for h before a consonant, W a for o, W ɨ for a, and Y ɨ for inverted r. For discussion of the changes, see Proulx (1984:168-169). Orthographic concessions to my word processor: s wedge is written as ŝ, c wedge as ĉ, schwa as ɨ, and Menominee epsilon as <.

2. In Yurok, **g not only is sensitive to a following consonant (going to w before a labiovelar and y before a simple velar), but to a preceding one as well: it is glottalized when the next preceding consonant is glottal. For example, Y ?e?gahtemar 'write a lot' (?ahtemar 'write', with infix **-eg). (Further infixing leads to yodation and the replacement of *ey?e by i?i, e.g., Y ?i?i?gahtemar also 'write a lot'.) Evidently, these developments follow the merger of **gw with **g in Yurok.

3. One Yurok example of this nominal ending is laryngealized: ?ahspeyu?r 'soup (lit. 'that which is drunk')', with root ?ahsp- 'drink' and -ey 'passive'. This appears to be secondary, as laryngealization itself is reconstructable as a nominalizing element (see **-...? 'nominalizer' below). In Wiyot, such presumably-secondary laryngealization of nominals is universal whenever the nominal ends in a voiced consonant. For example, W -V?y (e.g., púwutwu?y 'cooking utensils', with púw- 'cook', -utw 'with something', -uy 'someone') beside -Vy (as in kɨ́mɨruy 'someone steals food', and hɨskɨ́pay 'someone bites a piece').

4. The opposition between PA *ŝ and PA *ƚ is neutralized before a morpheme boundary (with *ŝ before *i(:) and *y, and *ƚ elsewhere) - but in this environment the Proto-Algic grade variation (**l/r) is still indirectly attested by the PA doublets of *l and *ƚ, as in PA *nal- 'windward' versus *naƚ- 'upriver' (Faries C nunim 'windward', nutimik 'up the river', and compare Faries C nutuhi'skum 'she walks up the river' for segmentation).

5. In a letter dated June 5, 1991, Ives Goddard has drawn my attention to the fact that, contrary to my statement in fn.6 of my paper on Proto-Algonquian verbs (Proulx 1990:140), we are in fact in extensive agreement on the indefinite subject endings of PA. I apologize for any confusion caused by my error. Evidently in a moment of distraction I confused his IN(animate) subject endings with his indef(inite) subjects

ones (Goddard 1979:133).

On another point it seems we are not quite in agreement. By 'citing data' I mean actually presenting supporting forms from two or more daughter languages - which I consider to be a minimum requirement for a new reconstruction. Merely mentioning that the endings in question are very largely preserved in Kickapoo, and refering to Paul Voorhis's doctoral dissertation, gives the reader a vexing choice between a long and time-consuming paper chase to find nine suffixes or simply remaining in doubt. His vague reference (ibid., p.85) to some other languages preserving the conjunct endings well is totally unhelpful.

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**-...? 'nominalizer' #299

**-ag, **-eg 'subordinative theme' #334

**-ayewi, **-eyewi 'spacial adlocative (toward)' #337

**-ayeł 'liquid' #310

**-ałw 'plant' #309

**-eg- 'plural' #338

**-em 'subordinative theme' #335

**-hpa:le:we 'front part' #312

**-łk, **-k 'chest (body part)' #343

**-o:tetkohc?riw-, **-o:tetkoht?liw- 'kidney' #314

**-tapti:take, **-tapti:teke 'backbone' #326

**-tecake, **-tegeteke 'buttocks' #327

**-tkan 'abstract final' #306

**-Vĉk, **-tk 'augmentative-pejorative' #291

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**-V? 'third-person subject' #300

**-V? 'tree, stem' #308

**-Vhl, **-Vhr 'lie, fall' #340

**-Vk 'nominalizer' #292

**-Vk 'postradical extension' #354

**-Vk 'third-person subject' #293

**-Vl, **-Vr 'nominalizer' #302

**-Vlt, **-Vrt 'l-dimensional' #281

**-Vm 'nominalizer' #294

**-Vm 'postradical extension' #355

**-Vm 'third-person subject' #295

**-Vn 'nominalizer' #296

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**-Vnki 'punctual spacial locative (in, at)' #336

**-Vw 'nominalizer' #304

**-Vw 'postradical extension' #357

**-Vy 'indefinite subject' #305

**-Vyaki 'kind, sort, way, place, time' #311

**-Vɨ 'nominalizer' #298

**-wan, **-wen 'abstract final' #307

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APPENDIX A: ADDITIONAL RECONSTRUCTIONS CITED

New reconstructions cited incidentally in this paper are:

(339) **ahp-, **ehp-, **ahpi:g-, **ehpi:g- 'press down on, bruise': (a) PA *ahp- 'down onto something', PA *ahpehł- 'bruise from a blow or fall' (incorporating prefinal **-Vhr

'lie, fall' #341, (b) W phatɨwɨɬ 'ladder' (with -at 'foot') and W phawatɨb 'step on it' (with postradical **-Vw ?), (c) PA *ahpi- (K ahpi- 'press, hold down', e.g., K ahpiskamwa 'she puts her foot on it', ahpihamwa 'she hold it down [by tool]'), PA *ahpi:hɬ- 'bruise from a blow or fall' (C ahpi:hcihe:w 'she bruises him', (d) W phigá?w 'bruises'. **g gives PA *y, which would be interpreted as Empty-y (see Proulx 1965:62) and deleted except before an element beginning in a vowel. Probably aspiration of **p in Wiyot is secondary after the loss of the initial **e (i.e., **hp ---> W ph in initial position). Compare secondary aspiration of an initial obstruent as a reflex of the prefix **k- in some dependent nouns (see Teeter 1964:79, Goddard 1966:402 n.11, and Proulx 1984:198). Alternatively, the reconstructions may be **ahph-, etc.

PA *ahp- 'down onto something': Sh ?pal?ka:ka 'ladder' and me?ĉi-?pal?ki 'she finished stepping on it' (with -Vl?k 'foot or body motion', as in niŝoŝkwal?ki 'I slipped and fell off', nikil?ka 'I stepped on it' p.337, ha:tal?ki 'she takes a step over' p.429 [with root ha:t- 'moving']), NiO apikan 'strap, harness' (holds something down), M ahpa:k- in ahpa:kesow 'she throws herself onto something (especially the ground)', ahpa:kece:hsen 'she lies down and relaxes', ahpa:ketɛ:?nen 'it is blown onto something'). PA *ahpehɬ- 'bruise from a blow or fall' (incorporating prefinal **-Vhr 'lie, fall' #341): M apɛ:hniw 'it's dark blue' (with dissimilation of the first h), bO nindapissingwe 'I have a dark blue face from a blow or fall', RhO pisaag 'it's bruised', cf. Mi ŝe:ŝapŝimaka 'I bruise her', and apissiani 'I fall into (a hole)'.

(340) **-Vhl, **-Vhr 'lie, fall' replaces **-Vhɬ #153 in order to account for some Wiyot forms I had not spotted when I made the earlier reconstruction, e.g., tá?lib 'it lies there' T26, tɨkwɨ?ŝanar- 'break arm by falling' T53.

(341) **cawoni 'fishnet': W ĉawɨdáĉ 'dip net' (dim. pej.), Y cowon 'seine net'. Compare Pe ĉawáhpɨnikan 'net sinker' (Seeber 1983:301).

(342) **kwetk- 'angle (for fish)': PA *kwetk- S85 (with *o for *we, and final *-e:), Y kɨtk- 'go trout fishing'. **kwetkaɬi, **kweckaɬi 'angling tool': PA *kwetkane:ya:pyi 'fishing line' (with *-e:ya:py 'string, line') S85; *mekeskani 'fishhook' S85 (with indefinite-possessor *me- incorporated, and with dissimilation of labials), and *kweskani (M kohka:n) 'fishhook', Y kɨtkɨɬ 'trout-fishing pole'. Note: Y ɨ in the verb is analogical to the noun, where it is the result of vowel harmony.

(343) **-łk dependent noun stem, medial **-k 'chest (body part)'. The dependent stem and medial have often been substituted for one another in the daughter languages, and they have frequently been combined. The original distribution of allomorphs here is reconstructed by rule, i.e., in every other reconstructible dependent stem beginning with a k-cluster the corresponding medial archaically begins in a single **k (although medials analogical to the dependent stem are common). The abstract finals **-wan, **-wen, and **-tkan have also often been added.

**-łk dependent noun 'chest (body part)': PA *-łk-a:łki (K -hkaahki) , *-łk-a:łkikani (f+wC -skaskikun, and probably Lemoine's aO -kakikan [with transcription underdifferentiated as to voicing]), PA *-łkwani 'chest' (Ps -skwɨn, Mc -puskun [with initial shift of *m- to Mc p, and its incorporation into the stem]), W -tkɨkwɨd (deverbal in ta-tkwɨd- 'chest' T53). The Wiyot form has incorporated medial **-k, and both daughter languages a final **-wan. The two other PA stems have this element twice (with link vowel **a:), and one of them the final PA *-kan. Used secondarily as a medial in PA *-a:łkikan (1C pakamâskiganehusuw 'elle se frappe la poitrine', aO micâkikân 'avoir la poitrine poilue'). Coming a full circle, this PA medial again serves as a dependent stem in C -a:skikan. It is no doubt this medial which is the source of the accretions to the two dependent stems with PA *-a:łk above.

**-k medial 'chest (body part)' #140). Used secondarily as a dependent noun stem in W -kwhɨd, Y -kwen, PA *-k-ikan (Ps -ikikɨn, if the first i is harmonic with the second), PA *-k-a:łki (F -ka:hki), and PA *-k-a:łkikani (RhO -gaakgan).

(344) **mel?-, **mer?- 'rub hard': (a) in PA *melek- 'rub hides' (with PA *-ek 'natural outer covering'), Y me?ləhpine?m 'you smear it' (with -op 'liquid' ?), me?repinek? 'I rub or massage something round', me?repo?y 'a file'; (b) Y mesew 'ointment' (with **-Vw 'nominalizer' #304), cf. mesi:gonoyek? 'I'm massaged'.

PA *melek-, *mehk- 'rub hides': (a) Sh mel?ke 'she rubs skin dry', nimel?ka:la 'I rub her (deerskin) dry'; (b) C mihkiw 'she scrapes hides'. The second Pre-PA **e evidently dropped under some conditions, and **lk gives PA *hk (see Proulx 1984:200).

PA *-ak, *-ek 'natural outer covering (skin, bark, and the like)': (a) in PA *pelak- 'peel, husk' S208 (root PA *pel-

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'strip, remove surface, tear off' S208), and in PA *pehŝak- 'remove peel, skin' (Sh nipŝakina 'I peel it', Mc pesxa:lɨk 'I skin an animal') with root PA *pehŝ- peel, husk' S153; (b) in M pes<:kah<w 'she husks him (Indian corn)' (reflecting PA *peŝek-, with root *peŝ- from Pre-PA **per-, grade 2-3 of **pel-). Further examples of the roots are: K penenamwa 'she takes it off or apart or loosens it by hand', K pesinea 'she skins him', Sh nipel?ŝkwi 'I got loose'.

(345) **re?w-, medial -e?w 'catch, kill': W su?mɨ́ 'I kill it (one)' (with -Vm '3-obj.'), Y -sew (in tensewok? 'I catch or kill a lot', ckensewi? 'someone catches a few' (with ten- 'a lot', cken- 'a few'). **-e?w deverbal medial 'catch, kill': W -ɨ?w (in ĉɨwa talɨ́?wɨd 'they catch those', ta-kɨcɨ?wɨd 'one gets a lot', kɨcú?m 'I caught a lot' [with -Vm '3-obj.']); Y -ew (in na?awok? 'I kill two', nahksewetek? 'I get or kill three', co?onewetek? 'I get or kill four' [with unipersonal transitive -et]). **nikhre?w- 'catch or kill three': W dikhú?m 'I killed three' (with -Vm '3-obj.'), Y nahksewok? and nahksewetek? 'I get or kill three'. The root could also be reconstructed as **se?w- 'catch, kill', but the deverbal medial points to an initial sonorant.

(346) **aphetk-, **ephetk- 'tie into a round shape, i.e., a bunch or bundle': PA *petkw-, medial *-a:peŝk 'lump, sphere, knot'; W hɨphɨtk- 'tie roundish objects' T53 (e.ġ., tu-lɨ́phɨtkɨlɨd 'they tie in bunches', hɨphɨ́ĉk [grade 3] 'bundle'). Semantically, PA *petkw- and medial *-a:peŝk have generally lost the meaning 'tie', retaining only that of roundness - the exception being M p<hko:n<:w 'she unties her'. This loss is facilitated by the addition of the final **-Vph 'tie, string, root' #162 to those stems that retain the meaning 'tie'.

PA *petkw-, medial *-a:peŝk 'lump, sphere, knot': F pehkwa:senwi 'it's blown into a lump', pehkwitepe:wa 'she's lump-headed', K pehkwaai 'it's spherical, globular', pehkwaahki 'ball', NiO bikwaakwad 'ball', M p<hkuahkwat 'solid roundish lump, oak-gall', p<hkuahkihsen 'she lies as a lump on a tree or solid', p<hkuahkiw 'small round elevation in the land', p<hkuahki:hs<h 'small mound', p<hkuahsepeta:w 'she knots it', -p<hki:ko:htakan 'adam's apple', C piskwahca:w 'it's a knoll', Mi pe:kwakiwi 'range of mountains', RhO bkosgaag 'it's a hump in the floor', bkogoodeg 'it hangs in a bunch', bkwaakwdoons 'pill', bkwaakod 'ball', K pehkwaanehkapizoa 'she's knotted', F pehkwapitowa 'she ties it in a bundle', M p<hkuahsepeta:w 'she knots it' and p<hko:n<:w 'she unties her', C piskwahpitwa:w 'she has hair tied in a knot', Mt pichk8achk8an 'noeud, excroissance d'arbre', Mc pxoxt 'knot on a tree' (with medial *-a:tkw 'wood'), medial Mc -apsk (e.g., newapskek'l 'they are four round inanimate objects', toxopskɨsit 'she's short and round').

(347) **aph-, **eph- 'tie, cord'. In W hɨph- 'tie', and in **aphetk-, **ephetk- 'tie into a round shape, i.e., a bunch or bundle' #346 and **aphe:kh-, **-a:phe:kh 'cord' #348.

(348) **aphe:kh-, **-a:phe:kh 'cord': Y pekcic [diminutive?] 'thread, string, rope', dependent -pek; medial PA *-a:pye:k 'string' A59. Composed of **-Vph 'tie, string, root' #162, and **-Vkh 'long thing' #155. PA generally incorporates the subordinator **-eg [see **-ag #334] from pseudodependent **w?ataphega 'sewing root' #102 into **-Vph #347.

(349) **atk-, **atkeyi, **ac̆keyi, medial **-atk 'earth, land': PA *atkyi 'land' A228; Y łkeł 'land', łkoł 'mud', łkey(om) 'clay', łkeyomi? 'it's dirty' (with -omoy 'covered with'); W -ɨtk 'land' (bɨcɨ́wɨtkɨk 'on dry land'). Cf. Y hełkew 'a place toward the mountains', and skelomoyek? 'I'm covered with dirt' Nb. 4:10. The last Yurok form shows the productive Y ł to s alternation.

(350) **kec-, **ka:c- 'wipe': PA *kesi:- 'wipe, rub, wash' (with incorporated link vowel) A774, *ka:s- 'wipe, rub, wash' (in Sh nikaθha 'I wipe it clean', nikiθa?kwe:na 'I wash her head') and *ka:si:- (with incorporated link vowel) A518-520; W kátb- (grade 1, in hi-kátbił 'she wiped it', tá-katbɨ́gɨdɨps 'I'm drying my face'). Note: Wiyot incorporates the root extension **-Vm #355. Compare W ba-kɨɨ́?ŝan 'go wash your hands', and ta-kúsił 'she's washing it'.

(351) **kewo?m- 'back 180 degrees': W ku?m- (e.g., kú?mɨtal- 'go back', with -ɨtal- 'go' as in kítɨtal- 'finish going'), Y kwom- in kwomoneme?m 'you take something back', otherwise kwomł-. Cf. PA *ki:we:- 'return home' A1002.

(352) **pew- 'put on the fire': PA *po:- 'put in medium (fire, pot)' (Sh me?ĉi-po:tawe 'she finishes putting wood on the fire', C po:nam 'she puts it as fuel on the fire', M po:nam 'she puts it in the pot'); W puw- 'cook' (incorporating intensive change ?); Y pewom- 'cook' with **-Vm 'postradical extension' #355. Cf. PA *apw-'roast' (as in *apwa:ni 'a roast' A156, C apwe:w 'she makes a roast'), and W kił lɨ́p 'it's cooked' T85.

(353) **way- 'overnight': W wáy(ɨd)- 'all night', Y woy- (in woypinek?w 'it's in water overnight', woykenek?w 'it floats overnight', woycok? or woykecok? 'I stay overnight',

woyonek?w 'it soaks overnight').

APPENDIX B: ROOT EXTENSIONS

There are several postradical extensions used after verb roots, and thus at times in nouns from nominalized verbs:

(354) **-Vk 'postradical extension': PA *-ek, *-ak (see ML 21.39, and Proulx 1985a:79), W kútkuŝiɨ 'one head' (with **nekwet- 'one' #63 and **-Vŝ 'head' #166), Y -(e)k in no:loy(k)- 'feeble', st(ek)- 'high point, apex', and woy(k)- 'overnight'. Algonquian examples: M mo?ceket<:hp<w 'he's bald-headed' (mo?t- 'bare', PA *-temp 'head' #90), PA *kakwa:le?lak- 'frightful' A569 beside unreduplicated *kwe?l-A1060, haplologic from *kwele?l- 'fear' (reconstructed with *?ɨ, see Proulx 1985a:79). See also M ahpa:k- 'down onto something' (from PA *ahp-) under **ahp- #339, and M n<?sek- 'dark' (PA *ne?ŝ- 'dark, alone, awful') under **neSĉ- #276. Compare Y ho?omohtkok? 'I hurt someone' (cf. ho?omohtoyek? 'someone hurts me' where passive -oy replaces -ek).

(355) **-Vm 'postradical extension': W -b in kátb- (grade 1, in hi-kátbiɨ 'she wiped it', tá-katbɨ́gɨdɨps 'I'm drying my face') from **kec-, **ka:c- 'wipe' #350; Y -om synchronically in me?wom-, ye?wom-, and historically in pewom- 'cook' (from **pew- 'put on the fire' #352) and nekom- 'skillful' (from **nakh- #229).

(356) **-Vn 'postradical extension': W talɨ-wáydatɨwáni?l 'they dance all night' (with **way- 'overnight' #353 and **-Vt 'foot' #167), Y -on in humonepek? 'I get warm' (beside hewomopek? 'I warm liquid' - with hewom- or hum- (free variants), -ep 'mediopassive', and -op 'liquid'), ka:megone?ɨ or ka:mege?ɨ 'it's bad weather', myo?repek? 'I run to quarrel', and possibly cpego?ron(ep)ah 'I race someone' (-o?r 'run', -ep 'mediopassive'). Perhaps the same element becomes premedial in **-en-eɨkw 'sleep, dream' #146 (beside **-Vɨkw of the same meaning).

(357) **-Vw 'postradical extension': PA *-w, *-aw (Bloomfield 1946:sec. 104-5, Proulx 1985a:63), Y -ew in sk(ew)- 'well' and perhaps myew-'stick in, submerge' beside my- 'push, surge, rise', and cf. W phawatɨb 'step on it' beside W

phatɨwìł 'ladder' (with -at 'foot'). See also PA *łe?ław- 'fork', beside PA *łi:?ł- 'fork', and Y slahł- 'separate, apart' under **SleSl- #277.

(358) **-Vy 'postradical extention': W -ay (in ku?mayúthił 'she goes back and forth by boat', with root **kewo?m- 'back 180 degrees' #351 and medial **-?o:nĉh 'by boat' #151; also in da?tayɨkhwɨdił 'she's got big shoulders', katbáyɨpłayɨwīł 'broom', and tbɨpłayú?wɨł 'scythe'); Y ce?l(oy)- 'dry', nekȯm(uy)- 'well', neskw(ey)- 'annoying', nohp(uy)- 'into', sek(oy)- 'fast', and wohp(ey)- 'across' (Proulx 1985b:103-112).

SYLLABLE BOUNDARY DEMARCATION IN HUALAPAI AND HAVASUAPAI

Marcellino Berardo

Abstract: This investigation focuses on syllable boundary demarcation in Hualapai and Havasupai, Native American Indian languages spoken in Northern Arizona. In an attempt to understand better the nature of the syllable, allophonic variation with respect to syllable position is examined. Cross-linguistic evidence suggests that sounds may take on similar characteristics according to their position in the syllable. Maddieson (1985) found phonetic vowel shortening before geminates in languages as diverse as Kannada, Hausa, Finnish and Italian. Phonetic vowel shortening in closed syllables was also found in Havasupai. A relationship between lexical stress and allophonic variation inside the syllable was found in Hualapai and Havasupai. Vowel lowering in closed syllables was also found in Hualapai and Havasupai.

Modern linguistic research has given much attention to the systematic study of the syllable (Fudge 1969; Halle and Vergnaud 1980; Ladefoged 1982; Maddieson 1985; Treiman 1988). In fact, syllable theories have been proposed from a number of linguistic fields such as phonology, phonetics, language universals and child language acquisition. Reporting from child language acquisition studies, Wijnen (1988) states that there seems to be a "priority" of development of the syllable-sized units over the development of phonemes.

It is widely agreed by linguists that segments of sound come together in such a way as to form units. These units are called syllables. Syllables seem to be basic to the structure of human language. They occur universally in every language. In fact, most native speakers seem to have the ability to break up words in their own language into syllable type segments.[1]

Given the above, it almost seems ironic that language investigators from all fields of linguistic research working on syllables have not yet been able to arrive at a universally agreed upon definition of the syllable. Commenting on the syllable, Ladefoged (1982) states that no phonetic definition of the syllable has yet been agreed upon. In an attempt toward a phonetic description and explanation of the syllable, researchers try to locate syllable boundaries. Important in determining syllable boundaries is the identification of the initial and/or final segment(s) of the syllable or bordering sounds (if any are present) of the syllable nucleus. The nucleus is generally identified by a sonority peak which is typically a vowel (Stockman and Stockman 1981) but can also be a syllabic consonant.

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This investigation analyzes allophonic variation that occurs at the boundaries of the syllable. It was found that allophones of phonemes can serve as cues for syllable boundaries. Through an examination of allophonic variation in the Hualapai and Havasupai syllable, it was discovered that allophonic variation can also cue the initial or terminal boundary of a syllable, but unlike in other languages reviewed in this paper, knowledge of stress plays an important role in Hualapai and Havasupai syllable boundary demarcation. Allophones that occur syllable initially in prestress position of a word may vary from syllable initial allophones that occur in poststress position.

Articulatory Evidence and Phonetic Syllable Boundaries [2]

One significant discovery which helped linguists locate syllable boundaries was the fact that different allophones of the same phoneme may occur exclusively in syllable initial or syllable final position. A phoneme positioned syllable initially would be produced differently than if it had occurred syllable finally. Since there is general agreement on locating the syllable nucleus, linguists can reasonably assume that phones preceding the nucleus could include allophones that may mark the initial border of the syllable. Furthermore, sounds following the nucleus could also include allophones that exclusively occur syllable finally.

In a study on nasal consonants in Japanese and English, Fujimura and Lovins (1977c) found a difference in velum height correlating to position in the syllable.[3] Systematically throughout both languages, the height of the velum was greater in the production of syllable initial nasals than it was for syllable final nasals. This difference in velum height can be considered a feature which signals the beginning of a new syllable if the velum is relatively higher, or the end of the syllable if the velum is relatively lower. Velum height, in other words, can mark syllable boundaries (at least in Japanese and English) for nasals.

Other phonetic characteristics of consonants corresponding to their position in the syllable led to the better understanding of syllable boundaries. Fujimura and Lovins (1978) report on phonetic characteristics that accompany English voiceless plosives depending on where they occur within the syllable. Phonetic characteristics such as aspiration (as is the case for voiceless stops) may signal a new syllable.

Differences in aspiration are associated with English voiceless stop consonants /p,t,k/ and the initial, medial/final parts of the syllable. For example, the amount of aspiration for the English /p/ varies according to its position in the syllable. In syllable initial position, the /p/ is aspirated. If the /p/ follows an /s/, the glottis nearly closes by the time of articulation release and the plosive /p/ becomes less aspirated or unaspirated.

The amount of aspiration, then, can play a role in determining syllable boundaries for syllables containing voiceless plosives. An aspirated stop signals the beginning of a new syllable. A lack of aspiration would signal that the plosive is in a syllable medial or final position.

In a study on syllabification with *sp*, *st* and *sk* sound clusters occurring word medially, it was found that the sibilant and the stop could be separated, or interpreted as belonging to two different syllables if the stop was aspirated.[4] This could be formalized as: -s $ Ph-, where P stands for plosive, h stands for aspiration, $ signifies syllable boundary and (-) refers to the rest of the syllable the phone belongs to. Examples of -s $ Ph- were found in words with prefixes that ended with an -s and the following morpheme began with a voiceless plosive. In these words, the initial syllable was interpreted as ending with the sibilant and the next syllable beginning with the voiceless plosive. Examples that are given are: mis $ calculate and dis $ courteous.

In words where the stop was not aspirated, the syllable break was made before the sibilant. This can be formalized as: $ sP-. Examples of words of this type are: sub $ stantial and un $ steady. In these tokens, the *t* in the st-clusters is not as aspirated as voiceless stops which occur syllable initially. It seems, therefore, that the feature aspiration, when applied to voiceless plosives can signal a starting boundary for a syllable word initially or as in tokens like mis $ calculate, word medially.

More evidence from allophonic variation which can signal syllable boundaries comes from studies concerning the English /l/. In structures such as CVC it was found that the syllable initial /l/ differs phonetically from the /l/ occurring in syllable final position. The syllable initial /l/ has been called "light" and the syllable final /l/ has been labeled "dark"(Fujimura and Lovins 1978:109). According to the light-dark /l/ dichotomy, the light /l/ occurs syllable initially and the dark /l/ occurs syllable finally. The light /l/, then, can be viewed as a cue for a new syllable to begin, marking the initial boundary of the up-coming syllable. Moreover, the occurrence of a dark /l/ is considered to mark the termination or final boundary of the syllable.

Articulatory evidence supporting the light-dark allophonic distinction of the /l/ was also found (Fujimura and Lovens 1978:109). Using metal pellets placed on the tongue, the two /l/'s were distinguished with respect to the position of the tongue blade.

Two problems arise with regard to the distinction of the two allophones of /l/. One drawback of the light-dark /l/ distinction for syllable boundary markings is the fact that in many dialects of English, the syllable initial and syllable final /l/'s are not always light and dark, respectively. The other problem concerning the allophonic variation of the /l/ to denote syllable boundaries is noted when considering language universals. "The bimodal separation between initial and final /l/'s (rather than by different vowel contexts, for example) is difficult to account for by any universal facts of speech dynamics" (Fujimura and Lovins 1978:109).

As demonstrated above, allophonic variation can play an important role in determining syllable boundaries. Allophonic variation as a cue for a syllable boundary works when one allophone of a phoneme occurs exclusively in one position of the syllable. Unfortunately, not all phonemes have phonetic variants which occur in exclusive syllable positions. And even when different allophones of the same phoneme do tend to have their respective positions in the syllable, that does not necessarily mean that the allophones remain constant from language to language or even dialect to dialect as is the case with the English /l/.

Vowel Duration and Syllable Structure

Are there any universal phonetic cues that may help in the recognition of syllable constituency? Does a vowel, for example, take on certain characteristics or behave in a certain way in a specific environment? The following reviews phonetic behavior of the nucleus of the syllable from a cross-linguistic viewpoint.

Attempting to show that vowel shortening is associated with syllable structure, Maddieson (1985:207) notes that in many languages there seems to be "a vowel duration difference that relates to the syllabification of the next consonant". Citing evidence from languages as diverse as Italian, Kannada, Hausa, Finnish, and Rembarrnga, Maddieson states the vowels tend to be shorter when occurring before a geminate than before a single consonant (p. 208).

Concerning syllable boundaries, Maddieson assumes that geminates are two identical, adjacent consonants separated by a syllable boundary. Formally, this can be shown as the following: - V G $ G, where V stands for vowel, G for geminate, $ for syllable boundary. Important to note is that some vowels are inherently shorter than other vowels. Theoretically, the inherently shorter vowels are even shorter before a geminate consonant.

Evidence from a variety of language families suggests that vowels tend to shorten before geminate consonants. This type of vowel shortening also holds true in fast/slow speech rates and "under prosodic conditions"(Maddieson 1985: 210). If what Maddieson "assumes" (that syllable boundaries fall between a geminate consonant cluster) is true, then the vowel shortening which occurs before a geminate can be considered as a cue for an up-coming syllable boundary. The geminate following the shortened vowel can be interpreted as the end boundary of the preceding syllable and the starting point of the following syllable.

Duration studies on the syllable, however, do not always yield conclusive results. Also attempting to define syllable boundaries by examining segment duration, Lisker (1978:134) focuses on how the segments of the syllable interact. Lisker's premiss is based on the notion that "coarticulatory linkages are markedly weaker between segments said to belong to different syllables".

In an experiment reported in Lisker (1978), the average duration of individual words with a CVCV syllable structure was measured. The measurement began with the onset of the initial burst and concluded with the termination of the medial closure, i.e. the closure of the second/final consonant. The CVCV sequences consisted of a velar stop + a stressed low back vowel /a/ + a bilabial stop. The measured interval or average duration from the onset to the closure of the medial consonant for the one speaker tested was approximately 300 msec. The "target" or "intrinsic" duration of the CVCV segment, then , was considered to be 300 msec.

It was concluded that the durational difference between /p/ and /b/, the medial consonants, C2 in the C1V1C2V2 sequences, determines the length of the preceding vowel. The duration of the vowel was greater when the bilabial plosive was voiced than when the bilabial plosive was devoiced. Furthermore, the duration of C1 did not appear to be affected by C2. Since there seems to be no "coarticulatory linkage" between C1 and C2, it could be suggested that C1 and C2 belong to different syllables. As Lisker points out, this could be one conclusion from the data if it were not "for the inconvenient fact that C2 does determine V1, and no one would consider placing a boundary between C1 and V1" (p.140). Therefore, based on the data from temporal relations in CVCV sequences, the occurrence of coarticulatory linkages between segments to determine syllable boundaries is not conclusive. Syllable boundaries cannot be accurately outlined according to durational evidence, at least for the above experiment.

Syllable Boundaries: A Synthesis

The above sums up the phonetic contributions to syllable structure presented in this investigation so far. The next section of this paper applies the allophonic approach to syllable structure to Hualapai and Havasupai with an emphasis on syllable boundary demarcation.

The syllable nucleus is generally understood as the sonority peak which typically though not exclusively consists of a vowel segment. But what about the phones that surround the nucleus? What is their relationship to the syllable nucleus? Allophonic and durational evidence were reviewed with respect to syllable boundaries. The evidence suggests that phones take on certain characteristics when positioned syllable-initially and other characteristics when positioned syllable-finally. These features or characteristics may be considered as signals or cues for syllable boundaries.

Important to note is that the reviewed evidence supporting syllable boundary demarcation is not total or systematically complete. In each case, only a small set of sounds are examined. There are problems or exceptions even within the small set of sounds under investigation. But, as demonstrated above, sounds do tend to vary depending on whether they occur at the beginning or end of the syllable. These differences are presently used to help define the syllable and its boundaries.

Evidence from Hualapai and Havasupai

Investigating bordering sounds in languages as diverse as Japanese and English only begins to make any universal claim on the nature of sounds bordering the syllable. More work must be done on a variety of languages and language families to learn more about syllable boundaries which will lead us to universal tendencies. From the Northern Upland Yuman languages Hualapai and Havasupai, evidence is offered to shed more light on the allophonic aspect of sounds that border the syllable. A more complete understanding of the behavior of the sounds bordering the syllable can lead to better isolating the syllable, a definition, and a clearer explanation of the structure or phonotactics of the syllable.

First, two important points concerning Hualapai and Havasupai should be considered. According to scholars working on Yuman languages, these two languages are structurally and lexically very similar. Kozlowski (1976) considers both languages as the same and states that "analyses of one hold true for the other" (p.140). This fact is important to this investigation because it allows data from both languages and analyses of both languages to be considered.

From the literature, however, there is evidence that there may be some differences between the two languages. Redden (1966:149) comments on the verb paradigm in Hualapai. There seems to be two different systems in use as of 1966. One system is used by older speakers and the other by younger speakers. It is noted that the older speakers use the suffix {-Ø} for first person, the suffix {-ŋ} for second person and the suffix {-k} for third person. The younger speakers use the suffix {-k} for first and third person and the suffix {-Ø} for second person. The prefix {ma-} is used by all speakers for second person.

Figure 1: Verb Forms Used by Older and Younger Speakers

	Older Speakers	Younger Speakers
1st person sing.	ñač a-V́-Ø	ñač V́-k
2nd person sing.	mač ma-V́-ŋ	mač ma-V́-Ø
3rd person sing.	θač Ø-V́-k	θač V́-k

The pronouns ñač, mač, and θač refer to first, second, and third person respectively.

This finding is questioned in Hinton (1980:328). It was found that the younger speakers of Havasupai use the suffix {-ŋ} for second person and the suffix {-Ø} for first person; the precise opposite of what Redden found in Hualapai. It is important to note the possibility that the two languages may not be precisely the same.

The second important point refers to data used in this investigation. Information on allophonic variation comes from Kozlowski (1976), Redden (1966), Winter (1966), Langdon (1975; 1976), and Hinton (1980). Other sources are Hinton (1984) Havasupai Songs and Watahomigie, Bender, and Yamamoto (1982) Hualapai Reference Grammar.

Havasupai Liquid Phonemes:

The two liquid phonemes in Havasupai are /r/ and /l/. Depending on where they occur in the syllable and word, their allophonic manifestations differ. Syllable-initially, /r/ can be manifested as a voiced stop [d] or a tense voiceless stop [t]. If /r/ occurs word-initially (and therefore syllable-initially), its allophone is the voiced stop [d]. If the /r/ occurs syllable-initially but word medially, the allophone is a tense voiceless stop [t]. An essential note to the environment is that the sound must not only occur syllable-initially but also before the primary stressed vowel in the word to manifest as a tense voiceless stop. More information on the nature of the stressed syllable of the Yuman word is discussed in the following section of this paper. Important for the analysis below is the fact that the occurrence of a phoneme with respect to the stressed vowel is a significant factor in descriptions of environment. Allophones of a phoneme can be manifested in different ways depending on their position in the syllable with respect to the stressed vowel.

The following examples demonstrate the descriptive statement in the above. The symbol [|] represents a syllable break.

Figure 2. Distribution of the Havasupai /r/.

English Gloss	Phonemic Representation	Phonetic Representation
1. five	1a. /θiráp/	1b. [θi | táp] (tense voiceless stop with retracted articulation)
2. lightening	2a. /ráv/	2b. [dáv]
3. toys	3a. /ráya/	3b. [dáya]
4. singing	4a. /swára/	4b. [swá | ɾa]
5. ear	5a. /smárk/	5b. [smáɾk]
6. hat tense	6a. /púr/	6b. [puṭ] (stop, possibly retracted articulation)

Demonstrated in 1b, the allophone of the /r/ in syllable-initial position is the tense voiceless alveolar stop [t]. This allophone occurs word-medially in prestress position. Occurring word-initially (and therefore in prestress position), the allophone of /r/ in 2b and 3b is a voiced alveolar stop. Also syllable-initial but in a poststress position rather than a prestress position, the /r/ becomes a phonetic flap. This can be seen in 4b. In poststress, syllable- final position, the phonetic manifestation of the phoneme /r/ is a voiceless stop with tense retracted articulation, demonstrated in 6b. .

Figure 3. Position of the Havasupai /r/ with respect to word stress

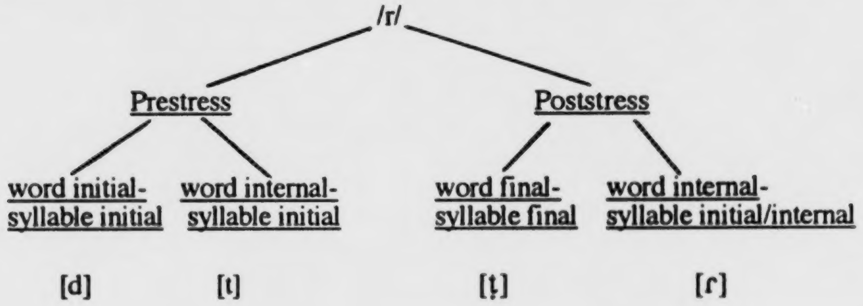
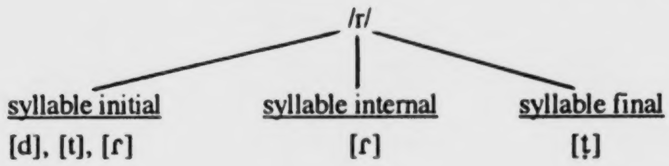

/r/
Prestress
Poststress
word initial-syllable initial
word internal-syllable initial
word final-syllable final
word internal-syllable initial/internal
[d]
[t]
[ṭ]
[ɾ]

Figure 4. Position of the Havasupai /r/ with respect to syllable position


/r/
syllable initial
syllable internal
syllable final
[d], [t], [ɾ]
[ɾ]
[ṭ]

The /l/ in Havasupai is a "clear alveolar lateral". In post stress position, the lateral is "prestopped". See Figure 5 below.

Figure 5. Havasupai /l/

English Gloss	Phonemic Representation	Phonetic Representation
1. in the house	1a. /wál/	1b. [wádl]
2. alfalfa	2a. /iwíla/	2b. [i | wí | dla]

The alveolar lateral is prestopped when it occurs in poststress position. In 1b, the lateral is syllable and word final. The prestopped allophone also occurs in syllable-initial position after the stressed vowel.

Lenition and Syllable Boundaries

Lenition can be manifested as spirantization for stops. The uvular phoneme /q/ is offered as an example. See figure 6, 1a-b for examples of /q/ as an onset to a primary-stressed syllable and examples 2a-b for spirantization of the phoneme /q/ in the syllable-final position of the primary-stressed syllable. An example of lenition for the fricative /v/ is given in figure 7 below. In a syllable-final consonant cluster, the phoneme /v/ may weaken to a phonetic [w].

Figure 6. /q/-[q] and [w]

English Gloss	Phonemic Representation	Phonetic Representation
1. deer	1a. /qwáq/	1b. [qwax] ~ [qwaq]
2. they were beaten	2a. /čipéqča/	2b. [či | pex | ča]

Figure 7. /v/-[v] and [w]

1. sickness	1a. /kwe ráva/	1b. [kwe | tá | va]
2. he is sick	2a. /kwe rávk/	2b. [kwe | dáwk]

The Vowel as Syllable Final Element

When vowels occur as the last element of the syllable, i.e. in an open syllable, they tend to be "phonetically longer in duration" (Kozlowski 1976 p.143). Vowels in open syllables also tend to be higher than the same vowel in a closed syllable.

Figure 8. Vowels in Open and Closed Syllables

English Gloss	Phonemic Representation	Phonetic Representation
1. drink	1a. /θí/	1b. [θí:]
2. head	2a. /hú/	2b. [hú:]
3. eat	3a. /má/	3b. [má:]
4. when it is dark	4a. /ñatqépčo/	4b. [ñat | qép | čo:]
5. at night	5a. /ñatqépo/	5b. [ñat | qí: | po:]
6. rain	6a. /kwekmáčič/	6b. [kwek | má: | čič]
7. it is raining	7a. /kwemáčkyu/	7b. [kwi: | máč | kyu:]
8. injure	8a. /mirmír/	8b. [mɩt | mɩ́ɾ]
9. injure	9a. /míriñ/	9b. [mí: | rɩñ]

The phonetic representations in 1b, 2b, and 3b show the vowel in an open syllable. These vowels are phonetically longer in duration than vowels in closed syllables. No allophonic data are given to demonstrate a phonemically long vowel in an open syllable. It is assumed that phonemically long vowels in open syllables also tend to be longer in open syllables than the same occurrence in a closed syllable.

To demonstrate vowel height in open and closed syllables, the data in 4-9 are offered. Data in 5a-b show a stressed vowel in an open syllable. The phonemic vowel is mid and front but the phonetic vowel is a higher front vowel. There is so much allophonic variation that an allophone of the mid front vowel encroaches on an allophone of the high front vowel. The same phonemic vowel in a closed syllable is given in 4a with its phonetic manifestation in 4b. An example of a nonstressed vowel in a closed and open syllable is given in 6a-b and in 7a-b, respectively. The phonemic mid front vowel /e/ in 6a occurs in a closed syllable. The allophone in the /e/ in a closed syllable, shown in 6b, is also a mid vowel. The data in 7a-b demonstrate the mid vowel in an open syllable. Again, the allophone of /e/ in an open syllable overlaps with an allophone of the high front vowel /i/, as shown in 7b.

The data offered in 8a-b show the allophone of the high front vowel /i/. In a closed syllable, the allophone is [ɩ], slightly lower than the allophone [i] which occurs in an open syllable, as seen in 9b.

The length distinction for the low vowel /a/ "is often neutralized by the syllable structure" (Kozlowski 1976:146). The long /a:/ loses its length distinction in a closed syllable (here the plural form) found in 3b.

Figure 9. The /a:/ in Closed and Open Syllables

English Gloss	Phonemic Representation	Phonetic Representation
1. he picks peaches	1a. (not given)	1b. [θpál yá:ka]
2. peach picker	2a. (not given)	2b. [θpál kiyá:va]
3. peach pickers	3a. (not given)	3b. [θpál kičyam l əv]

Prevocalic Glottal Stop

When the phonological shape of a morpheme begins with a vowel rather than a consonant, a phonetic glottal stop occurs before the vowel (Kozlowski 1972:11). The glottal stop, then, marks the syllable initial boundary for morphemes beginning with a vowel. Therefore, the phonetic shape for the Havasupai word *ul* "ride" is [ʔul]. Similarly, the phonetic forms for the Havasupai words *ol* and *ar* ("cook" and "trade" respectively) are [ʔol] and [ʔaṭ].

The Stucture of the Yuman Word

The fact that allophones of some phonemes are determined by position relative to the stressed syllable in the word is evidence supporting the stressed syllable as an important element in the word. In fact, the stressed syllable of the Yuman word coincides with the morphological root, which typically has the shape of CVC but can also be CV, VC, or V. The root can be considered "the indispensable phonological and semantic core of the word, the only part that carries inherent stress" (Langdon 1976:221). The root or basic part of the word can have other shapes. Redden 1966 sites eighteen different root shapes. Among the different shapes are CVCC, CCVC, CCV, CVCVC, and CVCCVC.

Certain phonological processes only occur with elements in the root. For example, assimilation of a short vowel to surrounding sounds occurs only root-internally. Langdon (1975) offers language facts from the Yuman language Yuma to illustrate this point. The short vowel /a/ is raised to a mid or high vowel depending on neighboring sounds. When preceded by a palatalized or labialized consonant, /a/ is raised to the mid vowel [e]. When surrounded by palatalized consonants, /a/ becomes [i]. The assimilation of a short vowel to neighboring consonants is a "tendency of great generality in Yuman languages" (Langdon 1975:220) and a process restricted to elements of the root barring any boundaries. See below for examples.

Figure 10. Assimilation of /a/ to [e] and to [i]

English Gloss	Underlying Form	Surface Form
1. to create	1a. -čáw	1b. ačéw
2. to go	2a. -wá-č (plural stem)	2b. awéč (plural stem)
3. to go	3a. -wá: (nonplural)	3b. awá: (nonplural stem)
4. to carry a long object	4a. a:-v-kyáw	4b. a:vkyéw
5. to be a young female	5a. x-čány	5b. xačíny
6. to conquer	6a. k-č-ám	6b. ḳačám

For the sake of clarity, the above figure specifies plural and nonplural stems only for examples 2 and 3. The stems were specified for these two examples to avoid confusion since the same verb "to go" is translated to two different Yuma forms.To demonstrate root-internal assimilation, it is not necessary to specify stem number. The forms used in 1a-b, 4a-b, and 5a-b are the nonplural stems. The form occurring in 6a-b is the plural stem. For more discussion and examples on root-internal processes and boundaries see Langdon (1975).

Examples 1a-b and 4a-b demonstrate the /a/ raising to [e] after a palatal consonant. Example 2a-b shows the raising process occurring after the labial consonant /w/. This assimilation process takes place only with short vowels, as evidenced by example 3a-b. Example 5a-b shows /a/ becoming [i] due to the preceding and following palatal consonants. A boundary occurs between the short /a/ and the palatal /c/ in example 6a-b. Assimilation to the preceding consonant does not take place if a boundary occurs between the conditioning consonant and the vowel, as seen in 6a-b.

Diachronically, phonological processes may also be explained with respect to the root. Described in Langdon (1975:224), the proto-Yuman *p > v a)"when following the stressed vowel and b) when preceding the stressed vowel, if not part of the root." The Yuman languages in which this rule applies are Hualapai, Havasupai, Yavapai, Paipai, Mojave, Maricopa, and Yuma. Yuman languages where this rule does not apply include Diegueno, Cocopa, and Kiliwa. Examples of the diachronic rule follow.

Figure 11. Proto-Yuman **p* > *v*

Languages	to hurt	man's daughter	to walk	father's father
1.Hualapai	rá:v	včé	vóka	napó:ˀ
2.Havasupai	rá:vka	vikyéˀ	vó:ka	napóˀ
3. Yuma	ˀačaráv	vačí:	avˀá:	napáw
4. Diegueno	wəráp	pəčá:y	-----	-nəpá:w
5. Cocopa	ráp	pasá:	puˀáw	nyipá
6. Kiliwa	gáp	pičí	kaˀá:w	páw

The first part of the rule, which refers to root-internal elements, can be seen in the examples for the verb 'to hurt'. The *p > v when following the stressed vowel. The second part of the rule refers to root-external elements. Examples of this rule, *p>v when preceding the stressed vowel if it is not part of the root, can be seen in the forms for 'man's daughter' and 'to walk'. The forms for 'father's father' demonstrate the *p* in prestress root-internal position.

Synchronic processes are also explained in terms of the stressed constituent of the word. In Hinton (1980:328), two phonological processes are described for Havasupai, G-assimilation and Cluster Simplification. In G-assimilation, the "*g* may take on manner (and/or place) features of the following consonant, especially if the *g* and the following consonant are followed by a third [-syllabic] segment." This process takes place "after a post-stress stem-boundary".

Cluster Simplification is a process where by the middle consonant of a post-stress cluster of three consonants is deleted. "This is especially true in a +CCC cluster, i.e. when all three consonants come after the stem boundary. A third rule, Glottal Deletion, occurs in the data below. This rule simply states that a "ˀ may be deleted anywhere, most often next to a [-sonorant] segment. Examples of these rules follow.

Figure 12. G-Assimilation, Cluster Simplification, and Glottal Deletion

Underlying Form	G-Assimilation	Cluster Simplification	Gloss
1. ʔ+ǰgyát+g- ʔ- wi	(ʔ)ǰgyátʔʔwi	(ʔ)ǰgyátʔwi	'I chop'
2. ʔ+yaám+g-ʔ-yu	(ʔ)yaámʔʔyu	(ʔ)yaámʔyu	'I go'
3. m+ǰgyát+g-m-wi	mǰgyátŋmwi	mǰgyátŋwi	'you chop'
4. Ø-ǰgyát+g-Ø-wi	does not apply	does not apply	's/he chops'

Conclusion and Discussion of Allophonic Variation and Syllable Boundaries

The studies of allophonic variation in English and Japanese reveal the fact that the same sound can take on different characteristics depending on where it occurs in the syllable. Phonetic facts from Hualapai and Havasupai suggest that syllable boundary demarcation may be more complex. Sounds in Hualapai and Havasupai take on different characteristics depending on where they occur in the syllable/word and where they occur in relation to the primary stressed syllable in the word. The liquid phoneme /r/ exemplifies this point.

The /r/ is realized as a tense voiceless stop [t] when it occurs syllable initially and word-medially in prestress position. Occurring word initially (and therefore syllable initially) the /r/ is a voiced stop [d]. Positioned syllable initially after the primary stressed vowel (therefore in word medial position) the allophone of the /r/ becomes a flap [ɾ]. As a word final and syllable final element, the allophone of /r/ is a tense voiceless stop produced with retracted articulation [ṭ]. See figure 2 examples 1-6 above.

Possible syllable initial allophones of the /r/ are [t], [d], and [ɾ]. Any of these manifestations of the /r/ could signal an up-coming syllable and/or word. In languages such as English and Japanese, it may be enough to posit that a specific allophone of a phoneme is enough to signal a syllable boundary. In Hualapai and Havasupai the case is more complex. Knowledge of the appropriate syllable initial allophone must be combined with a knowledge of the primary stressed syllable. For example, the flap [ɾ] allophone of /r/ occurs syllable initially but may also occur after the nucleus of the syllable, not as a syllable final marker but as an element within the syllable's coda. (See figure 2, 5a-b above.) Whether positioned syllable initially or coda internally, the flap allophone occurs after the primary stressed syllable.

Other allophones of the /r/ can serve as syllable and/or word boundary markers. The allophone [t] occurs syllable initially in a prestress position. The prestress position must be word medially. Therefore the /t/ can be seen as a syllable-initial boundary marker that signals an up-coming word-medial syllable which carries primary stress. The voiced allophone [d] of the phoneme /r/ can also serve as a syllable-initial boundary marker. It also occurs in prestress position, but occurs word-initially rather than medially. As a word-final and syllable-final boundary marker, the allophone [t̠] produced with tense retracted articulation occurs. This allophone can serve as a cue for the end of the word or syllable.

An ambiguity arises with the flap allophone of /r/ which only occurs in poststress position. It can occur either syllable initially or coda internally. Important to this manifestation of the /r/ is that it occurs after the primary stress. Therefore, it can serve as a poststress marker that may or may not be related to syllable boundaries. It is important because it helps demonstrate that knowledge of stress in Hualapai and Havasupai is related to allophone position, a factor not involved in other languages reported on in this investigation.

The phonetic manifestations of /r/, specifically [t], [d], and [ɾ] appear to be [-sonorant] and phonetically more closely related to plosives than to liquids. There may be distributional evidence that supports grouping the /r/ with the other liquid /l/ and not with the plosives. Unlike stops, the /r/ and /l/ cannot occur after an /s/ in an initial s+C cluster. Furthermore, in the Hualapai Reference Grammar, it was reported that Hualapai stops have a lenis~fortis distinction. This is not reported for the /r/ or /l/.

The liquid /l/ also demonstrates that knowledge of the primary stressed syllable is important to the allophony in Hualapai and Havasupai. The allophone of / l/ is a "clear alveolar lateral" in prestress position. In poststress positions, the /l/ takes on the characteristic of a stop and becomes a [dl]. The "prestopped" allophone occurs in syllable initial or syllable final position. (See figure 5 examples 1a-b and 2a-b.) Allophones of the /l/ phoneme do not seem to serve as cues for syllable boundaries, but rather refer to position in the word with respect to the stress.

Facts from lenition are also pertinent to syllable boundary demarcation.The phonemes /v/ and /q/ serve as examples. Evidenced by lenition facts, the /v/ is manifested as [v] in poststress syllable initial positions but is realized as [w] in poststress syllable internal position. The allophone [v], then, can serve as a cue to mark the initial boundary of a syllable. The realization of [w] would not cue an up-coming syllable. As seen in figure 6 examples 1a-b and 2a-b, the uvular stop /q/ is realized as a velar fricative [x] in syllable- final position. Occurring as the onset to the stressed syllable, i.e. in prestress syllable initial position, the /q/ is realized as a voiceless uvular stop [q]. Therefore, when the allophone [q] occurs, it can serve as a cue to mark an up-coming syllable.

In Hualapai and Havasupai the vowel or nucleus of the syllable is manifested differently depending on the syllable structure. As demonstrated in figure 8 examples 1-9, vowels in open syllables tend to be phonetically longer and higher than the same vowel in closed syllables. Phonetic vowel height and length, then, can serve as cues for syllable boundaries. An allophone of a vowel articulated higher in the oral cavity and longer in duration can mark the end of the syllable. Moreover, an allophone of a vowel produced lower in the oral cavity and shorter in duration does not cue a syllable boundary.

Syllable structure and vowel allophony are closely related. The vowel /a/ is also conditioned by syllable structure. In open syllables, the phonemically long /a:/ is realized by the allophone [a:]. In closed syllables, the phonemically long /a:/ is shortened to a phonetic [a]. (See figure 9 examples 1-3.) The long-short distinction for the vowel /a/ is not kept in closed syllables. Length distinctions are maintained in both closed and open syllables for the non-low vowels /e-e:/, /o-o:/, i-i:/ and /u-u:/. When the long allophone of the /a:/ occurs, it signals the end of the syllable. No other final element may occur after the phonetic long [a:] within the same syllable. Therefore, the [a:] serves as a cue that marks the syllable boundary.

This investigation focuses on the role of allophonic variation with respect to syllable demarcation in Hualapai. Information in this study is also applied to the wider question; Are there any universals in the behavior/functions of sounds bordering the syllable? Work on velum height for nasals in Japanese and English suggests further work in this area can prove fruitful. More work in this area needs to be done for Hualapai and Havasupai.

Also reported on in this study is the behavior of vowels with respect to syllable position. It was found that in many languages, vowels tend to be shorter when positioned before a geminate than before single consonants.Facts from Havasupai suggest phonetic vowel shortening in closed syllables. Also found in Havasupai is the tendency for vowels to be slightly lowered in closed syllables.

In English, aspiration occurs with syllable-initial voiceless stops. The stop series in Hualapai suggests a fortis, aspirated stop class and a lenis, unaspirated stop class. Further work must be done on the Hualapai stop series. It is as yet unknown, for example, as to whether syllable-initial fortis stops are more aspirated than fortis stops occurring elsewhere in the syllable. Moreover, are lenis stops more aspirated syllable-initially than syllable-internally or finally? Also, in a language where stress plays a role in determining the form of allophones, how does stress relate to aspiration and the stop series?

Finally, the relationship between stress and syllable boundary demarcation must be further investigated. Facts from Hualapai and Havasupai suggest that syllable initial allophones of a phoneme in prestress position may differ from syllable initial phonemes in poststress poition.

NOTES

1. The universality of syllable structure is questioned in A Theory of Phonological Weight by L. Hyman, Fortis Publications 1985. In section 3.3, Hyman considers data from Gokana. Based on "arguments frequently advanced for syllable structure", it is claimed that Gokana "has no syllable structure".

2. The term "phonetic syllable" is applied to a language specific unit whose borders are signalled by "extrinsic allophones". For more discussion on the phonetic syllable see: Davidsen-Nielsen, N. 1974. Syllabification in English words with medial sp, st, sk. Journal of Phonetics.2. 15-45.

3. This study was cited in Fujimura and Lovins (1978). Syllables as concatenative phonetic units, in A. Bell and J. Hooper (ed.s) Syllables and Segments, Amsterdam: North-Holland Publishing Company. pp.107-120.

4. This note refers to the study cited in 2 above.

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A Bibliography on Incorporation and Polysynthesis in Native American and Paleosiberian Languages.

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Abstract: This is a bibliography of materials relevant to the phenomena called incorporation and polysynthesis in the linguistic literature on Native American and Paleosiberian languages. The items are classified by area and family.

This is a bibliography of linguistic literature (including unpublished papers) on Native American and Paleosiberian languages discussing, or relevant to, the phenomena called incorporation (including, not only noun incorporation, but also verb incorporation, causative incorporation, passive incorporation, preposition incorporation, applicative incorporation, pronoun or pronominal affix incorporation, loose incorporation, etc.), and the generally related phenomenon of polysynthesis.

In order to limit the length of this bibliography, I decided not to include book-length grammars of particular incorporating and/or polysynthetic languages, even though such monographs usually contain chapters or sections which would be relevant to this bibliography. Article-length treatments of particular incorporating and/or polysynthetic languages, as well as book-length monographs focusing on the incorporating and polysynthetic properties of a particular language are included.

This bibliography is organized into one general subdivision, dealing with discussions of more than one Native American or Paleosiberian language family, and four subdivisions corresponding to geographical areas. Within these areas I have

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classified items into a general subsection, which is followed by noncontroversial language family or language headings. For convenience, I will give below an outline of the areas and headings.

1. General
2. Paleosiberian
    2.1. General
    2.2. Chukotan
    2.3. Nivkh (Gilyak)
3. North American
    3.1. General
    3.2. Algonquian
    3.3. Athapaskan
    3.4. Caddoan
    3.5. Chinookan
    3.6. Eskimo-Aleut
    3.7. Iroquoian
    3.8. Kalapuya
    3.9. Muskogean
    3.10. Natchez
    3.11. Salish
    3.12. Siouan
    3.13. Takelma
    3.14. Tanoan
    3.15. Tlingit
    3.16. Tsimshian
    3.17. Wakashan
    3.18. Yuman
    3.19. Zuni
4. Mesoamerican (including Uto-Aztecan)
    4.1. General
    4.2. Mayan
    4.3. Otomangean
    4.4. Uto-Aztecan
5. South American
    5.1. General
    5.2. Kuna
    5.3. Nadeb
    5.4. Quechua
    5.5. Tupi-Guarani
    5.6. Yagua

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LANGUAGE MAINTENANCE AND LANGUAGE RENEWAL
Among Cherokee People in Oklahoma

Barbara J. Brooks

Abstract: There was a time in the Americas when many very different languages were spoken by the diverse native peoples. This situation changed rapidly as waves of colonizing Europeans arrived, containing and controlling the native peoples, often forcing them to forfeit culture and language. Today remnants of some Indian tribes are striving to find ways to maintain or renew their own languages. This paper explores some of the issues involved, and then focuses on efforts to maintain and renew Oklahoma Cherokee.

Historical Overview

Before contact with usurping Europeans, the native peoples of the Americas spoke thousands of separate languages (Driver 1961:555). In 500 years the native languages of North America alone have been reduced to fewer than 200, with one or more additional languages being lost each year (Leap 1982:20). Furthermore, Krauss estimates that 80% of the remaining languages are already 'moribund', that is, not being acquired by children (Hale 1992:4). At the present time, however, there are also strong movements afoot within certain American Indian groups in North America to maintain or to renew their own language as a viable part of community life. This paper will provide a brief overview of the historical basis for the present situation, and then take a more in-depth look at the options and choices regarding language maintenance now facing the Cherokee Indians of Oklahoma.

The history of United States-Indian dealings is that of a cycle of making and breaking treaties on the part of the U.S. government and the forced removal of Indian groups across the continent. Some people, such as the Winnebagos, were forced to move six different times as white settlers encroached on their lands (Banks 1979:152). The following excerpt from a Cherokee newspaper hypothesized how the whites might set about taking Indian land in Texas:

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> ... a commissioner will be sent down to negotiate, with a pocket full of money and his mouth full of lies. Some chiefs he will bribe, some he will flatter and some he will make drunk; and the result will be ... something that will be called a treaty (Hagan 1961:99).

Not content to take Indian lands, the newcomers also set about systematically to undermine Indian social structure, seizing upon language as a central means for 'civilizing' these peoples whose ways were different from their own (Banks 1979:156). Thus:

> the Nez Percé did not lose their language by accident, but rather by design, through the policy of the federal government and various religious and missionary groups. The outside groups determined that the Indian tribes would learn English as a replacement for their own ancestral languages. But the process did not stop there. Tribes were also expected to supplant one religion with another, one culture with another, and one mode of subsistence with another ... (St. Clair and Leap 1982:xi).

Justification for the attempts to eliminate Indian languages were spelled out in the 1868 report of the so-called Peace Commissioners, who concluded that Indian peoples' 'barbarous dialects should be blotted out and the English language substituted' (Report of Commissioner of Indian Affairs (CIA) 1868:43-4).

The Bureau of Indian Affairs (BIA) soon followed the CIA reports by making this same policy explicit in its schools. Upon learning that both Dakota and English were being used for instruction, the Bureau directed:

> You will please inform the authorities of this school that the English language only must be taught the Indian youth placed there for educational and industrial training at the expense of the government. If Dakota or any other language is taught such children, they will be taken away and their support by the government will be withdrawn from the school (Report of CIA 1887:xxi).

Specific measures taken against individual students who used their native language at school included beatings and having their mouths washed out with the harsh lye soap then in use (Metcalf 1979:15). Even a little seven-year-old girl, away from home for the first time and speaking only Cherokee, was caned every time she uttered any sound that was not English, a language she had never heard and could not speak (M.A. Wickliffe, personal communication). Various punishments for speaking an Indian language at school continued well into the 1950's.[1]

According to Walker (1981:170-171), there were at least three widely held assumptions behind the crusade against native languages. These included a belief on the part of English-speaking educators that English was better than any other language, and certainly better than any Indian language, and perhaps 'the only language appropriate for rational discourse.' In addition, there was the assumption that 'all Americans should speak, read, and write English,' in spite of the fact that 'no generation of Americans has as yet conformed to this ideal.' A third assumption was that 'one must assiduously divest oneself of competence in any language other than English' in order to become fully fluent in English. These 'demonstrably false' assumptions are still popular among English-speaking educators who remain 'reluctant to permit the use of native languages in their classrooms.'

Furthermore, blatant racial prejudice is evident in comments such as this one, from an article entitled 'Education for Indians': 'They are, as a race, distinctly inferior to white men in intellectual vitality and capability' (Harrison 1887:321). Attitudes such as this were also manifested in official policy statements:

> If (the Indian) can read and write English understandingly, and understands the first four rules in arithmetic, he is sufficiently educated for all practical purposes for generations to come (Report of CIA 1884:67).

On the other hand, many Indian leaders tried to point out that poor academic attainment was due in large part to incompetent instructional personnel and not to any shortcomings of Indian children. These leaders appealed to Washington to more adequately fulfill its side of the signed treaties. One superintendent of Indian Affairs duly reported that:

> The chiefs whom I met in council complained that the employees heretofore sent to instruct them under the provisions of the treaty had

> taken their women to live with, and had done little else; and they seemed desirous to know if that was the method proposed by the government to carry out the stipulations of the treaty (Report of CIA 1862:303).

In addition to overt attempts to eradicate Indian languages, there were other factors hastening their demise. The countless government-backed efforts to eliminate or at least reduce Indian populations through armed conflict, germ warfare, forced removals and other disruptive activities resulted in the complete disappearance of countless tribes, their languages along with them. Even more recently, the government imposed a series of relocation programs designed to entice young Indian people by the thousands to leave their homes, come to resettlement cities in pursuit of frequently elusive jobs and thus effectively break up cultural continuity within the family structure back home. In addition, the relocated Indians often found themselves linguistically isolated as well, and use of their native language had to be abandoned in the new environment (Leap 1981:134-6).

Overall societal prejudice has also been a factor. Until recently, Indian languages were looked down upon by the majority white population. Young children were often made to feel that 'in order to gain an adequate command of English, the Indian student is ... forced by a culturally alien educational system to deny a basic part of himself' (CAL 1975:3). All too often, even those academics who specialize in languages and linguistics have failed to exert their professional efforts and sufficiently address their attention to Indian languages before they perished (Hale 1992:6-10). Thus, Chaika once reported that:

> ... so unimportant have American Indians been to their usurpers that Ohanessian in 1972 could complain that we did not know how many Indians of any type were monolingual Indian speakers, how many were bilingual, what sorts of English were spoken by different Indian groups, how many did not speak tribal languages at all, in what social settings Indian languages were used and in what settings English was used, what sorts of differences there were between the generations in language use, or what attitudes the Indians had towards English and towards their tribal languages (1982:240).

The pressures against Indian language maintenance were compounded by Indian parents themselves. Oftentimes, a parent who vividly remembered being beaten for 'speaking Indian' in school elected to raise the next generation to speak only English, hoping to spare them the same tortures and societal handicaps in the future (M.A. Wickliffe, p.c.). Against such a backdrop of difficulties, it is little wonder that many Indian languages failed to survive.

The fact that any Indian languages have persisted at all is an attestation to the cultural cohesion and strength of Indian peoples. Walker (1981a:170) cogently makes an interesting comparison of the literacy levels of those for whom English is the native language and those for whom it is not:

> We are told that a very large minority of American high school graduates who speak English as a native language are 'functionally illiterate.' That is to say that millions of native speakers of English in the United States are unable to read their own language adequately despite twelve years of instruction in literacy skills and growing up under constant bombardment of printed English ... This being the case, it is remarkable indeed that Americans whose first language is not English and who have received no support whatever from the American educational system have nonetheless contrived somehow to preserve their own traditions of literacy. In the case of some American Indian societies this feat has been accomplished by people who, for several generations, were forbidden to use their native language at all in Federal Indian Schools.

This 'remarkable' accomplishment is due in large part to the fact that language is viewed by many Indian peoples as critical to maintaining cultural identity and continuity (Medicine 1982:3).

Today, Indian people are more and more expressing their concern and beginning to seek ways to keep their native language viable or to renew it if it has fallen into relative disuse. Indeed, in some cases,

> Ironically, the very parents who neglected to teach their children Lakota are now the ones who are most concerned about having the

> language taught at school, since they realize that the disappearance of their ancestral tongue will mean the loss of group identity (Schach 1980:178).

Cherokee

Cherokee people in Oklahoma take great interest in their native language, whether or not they themselves still use it. Indeed, Cherokee continues to be the home language for thousands, and some would assert that a person must be able to speak Cherokee in order to be Cherokee.[1]

There is also a long and justly proud history of literacy in Cherokee which continues even today in many Cherokee churches and in the practice of traditional Cherokee doctors. Beginning with Sequoyah, a monolingual Cherokee who invented a syllabary for his people in 1821, Cherokee people established a tradition of literacy far surpassing their new white neighbors'. In the 1830's Cherokees were estimated to be 90% literate, using Cherokee for everything from personal letters and accounts to newspapers and books (Walker 1969:151).

This achievement was one of many which led Mooney (1975:xi) to comment that 'unlike most Indians, Cherokees are not conservative.' By this he meant that Cherokee people did not cling to the old ways, but rather 'that the Cherokee, more easily than other tribes, made the transition from ancient tradition to methods, tools, and ways that they recognized as superior and useful.' (Bettis 1975:xi). Thus the invention of literacy in Cherokee was quickly embraced and put into practice. Willingness to learn and adapt also enabled them to adjust and survive as their land and livelihood were whittled away by treaties.

Eventually, gold was discovered on what was left of the ancestral land. The U.S. government confiscated the Cherokee printing press and marched the Cherokee people along the infamous 'Trail of Tears' during the winter of 1838-39, leaving one quarter of the Cherokee Nation dead along the way. Nevertheless, upon arrival in Indian Territory, the people reorganized and soon set up a new printing press. Knowledge has long been considered the hallmark of a mature and responsible member of Cherokee society, and 'Cherokees associate literacy with knowledge' (Walker 1981a:180). In accordance, the Cherokees established an outstanding school system in Tahlequah, Indian Territory, kept up at the expense of the Cherokee Nation, for all citizens (Walker 1981a:150).

This system included high schools for both women and men, as well as primary, mission and orphan schools for Indian, black and white children (Mooney 1975:157). Most Cherokees were literate in both Cherokee and English at this time, and both were used in the schools. Indeed, 'the Western Cherokee had a higher English literacy level than the neighboring white populations of either Texas or Arkansas' (Walker 1969:151). Far from emulating the Cherokees' success, the United States dismantled their schools, confiscated the Cherokee press once again, and officially dissolved the Cherokee Nation, incorporating it into the state of Oklahoma in 1907 (Walker 1981:147-50).

Since that time, literacy in both Cherokee and English has dropped, although spoken Cherokee is still quite important. Leap (1981:134) quotes one Cherokee educator who explained how important a viable Indian language tradition is:

> For most Indian tribes, the most symbolic thing to them is their language. The Cherokee talk their language and by this they are able to define the tribe ... There was a time when we lost most of our people over sixty. If we did not have our rituals written down, we would not have them today. Young people in urban areas do not know to speak their native language and I think it is critical that they learn. If they don't, they will be in a bind because you cannot be an Indian and go home and not know how to speak your language.

Certain segments of Cherokee society continue to promote Cherokee language and literacy. Both of these are closely tied to cultural identity and to language attitudes and issues. It would seem that, as long as Cherokee and English each serve viable separate functions for Cherokee people, bilingualism will be the norm in their part of the world.

Contemporary Issues

The following excerpt from The Written Languages of the World concerning Cherokee helps to establish a backdrop for the discussion of issues that follows:

> No other Indian ethnic group has made so decided an effort to modernize their political and cultural life in order to adapt themselves to new conditions created by the white man and thus to make possible peaceful collaboration, without surrendering their inalienable rights

> to a community identity ... At the same time, language maintenance for so small a group is becoming more difficult in a time of increasing interaction between all segments of the country's society (Kloss and McConnell 1978:534).

Some of the language issues now facing Cherokees are similar to those facing other groups; some are more specific to their own situation in Oklahoma. The general issues include whether the language should be maintained or not; whether renewal programs should be devised for those who have not learned the language; what method or methods of maintenance should be employed; what vehicle should be used, i.e. school instruction, or community activities, or home-based activities; what mode should be employed, i.e. should the program be designed to preserve oral or written Cherokee, or one at the expense of the other; whose responsibility is it to maintain the language, to conduct a program, and to pay for it; what group or groups should be served by the program; who should prepare materials; what qualifications should teachers have; what measures should be used so that the people know when a program is doing whatever it is supposed to be doing, and so on.

Of particular interest to some Cherokees is the question of whether the Cherokee language needs maintenance or not, and what should be done by whom in either case. Cherokee was considered to be extinct for all practical purposes earlier in this century, at least as far as outsiders were concerned. Even the Kilpatricks in Oklahoma thought that 'Sequoyah's syllabary and the whooping crane stand in approximately the same relationship to oblivion ... The spoken language itself faces extinction' (Kilpatrick and Kilpatrick 1965:viii). Yet a thorough look back into the hill country communities reveals that the Cherokee-speaking population continues to increase and is now estimated at well over 11,000 in Oklahoma alone (D.H. King, p.c.).

Equally interesting are the differing internal attitudes about the language. The official tribal Council is proud of past accomplishments, but until recently adopted a laissez faire attitude towards the fate of the language, as if Cherokee were nice but not really necessary in modern life. At the other end of the spectrum is an organized group of conservatives who have consistently held that Cherokee must be protected and promoted as part of the cultural identity of the people. Individual opinions range from the parent who wishes to see the language maintained but does not wish to see her children and grandchildren held back academically or socially because they may speak Cherokee, to those who feel that it is only by keeping the language alive that they will be able to keep from losing positive basic group values not evident in dominant society (R. Allen, p.c.). Then there are some who actively promote language renewal designed to insure that there will be expert speakers who will encourage others to keep learning the language (Otto 1982:32-3).

Likewise, people disagree as to which vehicle should be used to maintain the language. The Cherokee syllabary has traditionally been taught in some Cherokee speaking churches and is used by Cherokee doctors as well. Then there are the monolingual Cherokee grandparents whose grandchildren still learn from them. Many people feel that this is sufficient, especially those who feel that people will manage to become bilingual as the need arises in their environment (J. Gonzales, p.c.).

Many others feel that schools are the best vehicles both for maintaining Cherokee and for assisting monolingual Cherokee children to become bilingual in Cherokee and English. At the same time there are Cherokees who, like so many other Indians, see white-controlled schools as a threat to Indian culture, since they so often separated young people from their culture either physically or socially, or both. On the other hand, there are some who actually have fond memories of years spent at the old boarding schools, despite the hardships, because in some cases they inadvertently helped to perpetuate a sense of Indian identity albeit with English as the lingua franca (McBeth 1984:4-12).

Two other serious concerns about entrusting language maintenance to the schools involve the dearth of qualified and motivated personnel who are competent in both Cherokee and teaching skills, and the very real problem of continuity.[3] There have been many cutbacks in public school programs lately, and there can be no guarantee of future government support for language maintenance or bilingual education programs, although the Native American Languages Act may well help change that situation.[4] It can be quite disheartening to set up a program that raises expectations and hopes, only to have it dismantled before any benefit to the children accrues. Indians have had quite enough of unfulfilled promises.

More unanimity of agreement can be found regarding which mode of language, oral or written, than on any other issue. Cherokee people are justifiably proud of their history of literacy and usually expect both spoken and written Cherokee to be made available. There is none of the aversion to forms of writing found among certain other Indian groups (Walker 1984:42-52, Zaharlick 1982:44).

Who should take responsibility for a Cherokee language program is less clear-cut. Legally, 'the duly constituted government of each tribe' has 'the authority to make all decisions on all matters that affect the interests of the tribal aggregate,' including language issues (Leap 1982:21). However, until recently Cherokee Nation has felt little urgency about taking any specific stand on language issues, due both to history and to the contemporary makeup of the Council. English, not Cherokee, has been the official language of the Cherokee Nation since the 1820's, and few of the political leaders have been fluent in Cherokee since that time. Cherokee has survived among the people, not the leaders (R. Strickland, p.c.).

So, for the present, the people have taken it upon themselves to be concerned with language issues, and are developing projects that involve children, parents, communities and schools. This is as it should be pedagogically, for children's success in school is frequently a reflection of preparation and attitudes at home. Stubbs (1980:99) has found that:

> young children will have particular difficulty in learning to read if they grow up in a home or cultural background with no tradition of literacy and hence no appreciation of the purposes of written language.

In another study, DeStefano (1984:164) had three young subjects who corroborated Stubbs' finding:

> The three boys all expressed the opinion that a child would do better in first grade if s/he already know (sic) how to read when s/he came to school.

Another delicate but crucial issue is how to best combine the twin goals many Cherokees have of success in English coupled with pride in being Cherokee. There are real problems involved in trying to function successfully as part of two different cultures. Oftentimes, acceptance by the dominant culture is interpreted as rejection of home culture or can result in rejection by the home culture. Trying to maintain one's home ties can result in lack of credence with dominant society people. Then there is the emotional drain that can result from trying to switch back and forth as the occasion demands (McLaughlin 1978:3).

The situation poses a real dilemma for parents and teachers alike: How do you best enable Cherokee children to adapt in a dominant society academic setting and prepare them for the option of life later on in the world beyond, while at the same time helping children who have little knowledge of Cherokee and their own culture but want very much to learn more in order to develop self-esteem and a sense of identity?

Efforts

In the earlier part of this century, most whites assumed that Cherokee had died out altogether. There was so little real interaction that few facts at all were available (O. Werner, p.c.). Then the University of Chicago Carnegie Cross-Cultural Education Project was organized. Its director wanted to 'determine whether it is possible to devise more efficient means of teaching reading-writing to peoples in underdeveloped areas;' Indians were selected because supposedly they constituted 'both a prime, and a difficult, set of subjects for this experiment' (Tax 1963:1). Cherokees were selected to study because 'In 1870, when the Cherokee were an independent people and ran their own school system, they (the Cherokee speakers) were a better educated people than the surrounding whites and better educated than they are today;' however, 'Cherokees withdrew from white institutions because' in the view of one of the project organizers 'they saw themselves being threatened with social death and thus defined education and English in this light' (Thomas 1963:4).

In the course of its investigation, the study found that 'Nearly every publication on the Cherokees has predicted that their language was dying out; yet Cherokee is still indisputably the language with which Cherokees communicate.' The same report summed up the linguistic situation as follows: 1) Cherokees feel that to be Cherokee is to speak Cherokee; 2) Whites disapprove of speaking Cherokee; 3) There is concern about Cherokee remaining strong; and 4) Cherokee settlements must have a common language to function well (Wahrhaftig 1965:10,22-24). Overall, the study concluded that problems were largely due to self-imposed social isolation.

More recently, the Cherokee National Tribal Council passed their own resolution, 'Calling for the Cherokee Nation of Oklahoma to Approve the Establishment of a Cherokee Language Project' (CNO Resolution No. 15-84). By this action they enabled Durbin Feeling, a gifted bilingual Cherokee on their administrative staff, to begin establishing 'a base of operations' for Cherokee language projects. The language planning goals are two-fold: All Cherokees should be proficient in English and all should be able to speak and write Cherokee. Summer Institutes in Cherokee Literacy have been held for fluent adults interested in reviving this skill in their home communities. Long-range plans include computer generation of local new literature in Cherokee as the funding and manpower become available.

In 1991 Cherokee Nation authorized a new Language and Culture Program to produce modules to be used throughout public schools in the 14-county area that comprises Cherokee Nation of Oklahoma.[5] Other Oklahoma tribes are eagerly awaiting the results, while considering their own potential language and culture programs. Additionally, for older learners, courses in spoken Cherokee and in the syllabary are available through the local university.

From this survey of projects and attitudes, it has become apparent to me that no program can succeed unless it takes into account and meets the felt needs of the community in addition to meeting the needs of the individual learner. Another insight derives from the tremendous difficulties inherent in dealing with the government in order to receive federal funds. Overall, it seems that community generated and sponsored efforts stand the best chance of success for language maintenance or renewal.

In trying to find out what types of options regarding language are facing Cherokee people, I was deeply impressed by the needs of the children and by the limited resources. It was amazing to see how political differences and divergent opinions have come to play so influential a role in language policy and choice among a people who traditionally governed themselves by consensus. I was also impressed by the relative lack of references available. American Indian languages are usually ignored or perhaps lightly glossed over in studies on bilingualism, analyses of language programs, educational surveys and the like.[6]

Conclusion

Cherokee people, like other 'persistent' peoples of the world, still have a strong sense of identity and a societal structure that perpetuates community values, whether outsiders are aware of this or not (Walker 1981b:86). It seems that at a time of conflicting views and competing needs, the historically resourceful and adaptable Cherokee people are going about the task of language maintenance in their own way.

There are several programs in operation designed to meet perceived needs, and it seems likely that Cherokee in both its spoken and written forms will continue for some time. However, the inroads of television and other pressures of being surrounded by the dominant society are taking their toll, as are intertribal marriage, Anglo-controlled educational settings and the frequent need to make a living outside the home community.

Cherokees care very much about their language, but they have diverse opinions as to what can and should be done about it. They also care, and rightly so, about how their resources should be involved in any language program. The conviction is growing that the solutions must and will come from Indian people themselves.

NOTES

1 Information gathered from interviews conducted during the author's dissertation fieldwork, 1984-1992, Cherokee Nation of Oklahoma.

2 Cherokee is a North American Indian language still spoken by some 11,000 people in Oklahoma, where the Cherokee people were forced to relocate in the 1830's, and by perhaps 1,100 more people in North Carolina, which was part of their ancestral home. There are at least six dialects in use today (D.H. King and J. Manus, personal communications). According to Cherokee Nation records, there are over 100,000 Cherokee Indians worldwide.

3 For a discussion of Native American Language Centers which would fulfill this need for trained, language-competent personnel, see Hale 1992:23-28.

4 The major benefits and provisions of this law are presented in Hale 1992:15-16.

5 The author was privileged to assist in this effort by gathering sociolinguistic information for the tribal language experts charged with responsibility for implementing the new program. This data, along with results from ethnographic fieldwork conducted in Cherokee Nation of Oklahoma during the period 1984-1992, will be reported in the author's forthcoming dissertation from Northwestern University.

6 Krauss describes how political favoritism greatly infuences the treatment of languages (Hale 1992:4-5).

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